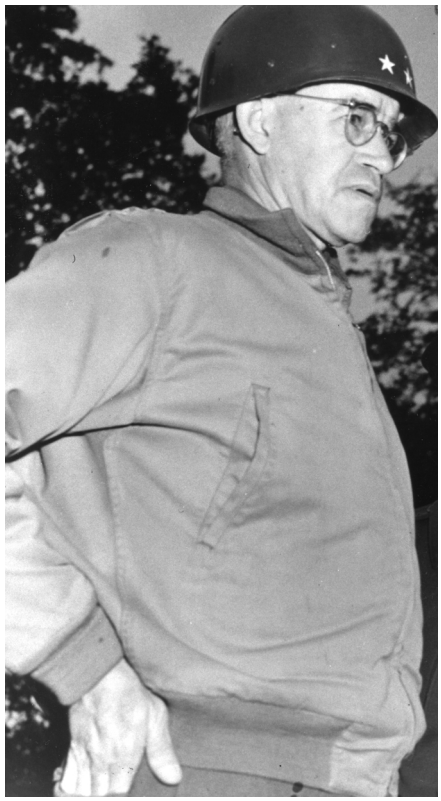
Chapter Two

Preparing for Joint Operations

As Allied preparations for the invasion of the continent began in earnest, Generals Patton and Weyland appeared in the United Kingdom within a week of each other. Patton arrived by air at Prestwick, Scotland, *incognito* on January 26, 1944, following a painful five-month exile in Sicily. The so-called slapping incidents, in which he lost his temper and struck two hospitalized soldiers suffering from combat fatigue, left him sidelined while others received choice European command assignments: Lt. Gen. Mark Clark assumed command of the U.S. Fifth Army in Italy, and Lt. Gen. Omar Bradley, Patton's former subordinate in North Africa and Sicily, became commander of all American troops during the buildup in the United Kingdom. Immediately on arrival, Patton journeyed to London where General Eisenhower, Supreme Commander, Allied Expeditionary Forces, informed him that he would lead the U.S. Third Army, which would enter the conflict only after Bradley's U.S. First Army had ensured success in the initial landing on the coast of France. At that time, Bradley would turn over command of the First Army to Lt. Gen. Courtney H. Hodges and assume command of an army group, with both Patton and Hodges reporting to him. By all accounts, Patton was grateful for the opportunity.[1]

Lt. Gen. Clark, soon to take command of the Fifth Army in Italy, confers with Lt. Gen. Patton in Sicily.



Lt. Gen. Omar N. Bradley, commander of all American troops for the Normandy invasion.

At the beginning of February 1944 Patton personally welcomed the advance party of Third Army Headquarters personnel at Peover Hall in Knutsford, near Chester, in Cheshire. The main body of his army would not arrive until late March, and Third Army units would continue to disembark until D-Day on June 6, by which time 275 separate Third Army camps dotted the northern English countryside. For the next five months Patton faced the challenge of molding his inexperienced headquarters and subordinate units into the capable fighting force he demanded. Meanwhile, General Eisenhower directed him to remain *incognito*, misidentified as the commander of a mythical U.S. Army group in southern England preparing to land in France at Calais. In this covert operation known as Fortitude, Allied leaders took advantage of the Germans' known apprehension about Patton's next appearance, successfully deceiving them into believing that Calais was the appointed landing site for Operation Overlord.[2]

Largely unknown outside the AAF, General Weyland looked forward to his first combat assignment. While Patton busied himself establishing headquarters at Peover Hall, Weyland arrived without fanfare on January 29, 1944,

after leading his 84th Fighter Wing of P–47 fighter-bombers on a four-week trans-Atlantic flight that staged from North Carolina southward across the Caribbean through Brazil and French West Africa, then north from Africa across the Bay of Biscay to Keevil and nearby airfields in the vicinity of Salisbury in southern England. Weyland immediately was reassigned as deputy to General Quesada, commander of the IX Fighter Command. With headquarters at Uxbridge, 16 miles northwest of London, IX Fighter Command would prepare and train American fighter contingents for the invasion. The reassignment orders also named Weyland commander of a IX Fighter Command subordinate organization, the XIX Air Support Command—redesignated XIX Tactical Air Command (TAC) in April 1944—one of several tactical operational commands earmarked for service in support of field armies in France. Like Patton and with two jobs to manage, Weyland began almost from scratch to assemble and shape a largely inexperienced group of American aviators and support personnel into an effective fighting force.[3]

The Generals Paired

Despite arriving within a week of each other, the two commanders probably did not meet personally until much later. Given their disparate personalities and backgrounds, at first glance this selection of officers as combat partners could hardly seem to be a likely combination. Though both hailed from California and had married women of prominent families, each exhibited vast differences in temperament, outlook, and experience.

Born in the affluent Pasadena suburb of San Marino in 1885, George S. Patton, Jr., grew up on a palm tree-covered estate that abuts what is today the Huntington Library and Gardens. His family, rooted in Virginia aristocracy, was

Lt. Gen. Patton and Brig. Gen. Weyland

steeped in a tradition of military service. Patton's father and grandfather graduated from the Virginia Military Institute (VMI); the latter died under arms for the Confederate States of America during the Civil War. After attending the Classical School for Boys in nearby Pasadena, California, where he developed a lifelong interest in military history and the deeds of great men, Patton spent a year at VMI before entering West Point in 1904. There, despite a poor first year's performance in mathematics, he distinguished himself in military science and athletics, and stood 46th in the 1909 graduating class of 103. Throughout his life, Patton suffered from dyslexia, which his biographer, Martin Blumenson, considers important to an understanding of his complex personality. If the dyslexia provoked inner turmoil and a sense of insecurity, it likely helps explain his well-known outbursts of profanity and arrogant behavior. Unquestionably, he drove himself to surmount that particular affliction and become a great military leader.[4]

Indeed, by the early 1920s Patton had made a name for himself in the United States Army. After graduating from West Point, he entered the cavalry and achieved prominence for his superb horsemanship, swordsmanship, and as a U.S. pentathlon athlete in the 1912 Olympics. Serving briefly as an aide to Chief of Staff Gen. Leonard Wood, in 1916 he joined Gen. John Pershing's well-publicized "expedition" into Mexico in search of Pancho Villa. While there, Patton gained notoriety by wounding one of Villa's generals in a dramatic pistol fight, "man-to-man." When America entered World War I in 1917, Patton left for France as commander of the American Expeditionary Force's Headquarters Troop. More important to his future career, however, General Pershing placed him in charge of organizing an American tank corps. Leading this First Tank Brigade in the battles of St. Mihiel and the Meuse-Argonne in 1918, his mechanized force helped propel the American assaults before German machine gun fire left him wounded and out of action. In a field hospital he accepted the Distinguished Service Cross, the Purple Heart, and promotion to colonel.

During the interwar period, Patton held important posts in the cavalry and tank corps and along the way attended both the Army's Command and General Staff School, the Army War College, and served as the G–2 operations chief in Hawaii. His drive and leadership skills brought him to the attention of a future chief of staff, Gen. George C. Marshall. As the U.S. Army's foremost authority on tanks and mechanized warfare at the outset of World War II, Patton was the logical choice to organize the U.S. Armored Force at Ft. Benning, Georgia. As commander of the 2d Armored Division he participated in the Tennessee and the Carolina maneuvers, and served as an umpire in the Louisiana war games. He was also a private pilot and thus predisposed to view air favorably. In 1942 he assumed command of the First Armored Corps and organized the Desert Training Center at Indio, California, in preparation for Operation Torch, the invasion of North Africa.

In the invasion of North Africa in November 1942, Patton commanded the Western Task Force, which landed at Casablanca in French Morocco. Then,

in March 1943, he led the U.S. II Corps following the Kasserine Pass battle. Later, he assumed command of Seventh Army for the invasion of Sicily in July 1943, where he achieved recognition by besting British General Montgomery's forces in a race for Palermo and his subsequently undesired notoriety in the slapping incidents. George Patton combined temperamental outburst and tactless public conduct with a mastery of mechanized *blitzkrieg* warfare and, under fire, leadership by example. At least the latter attribute moved General Eisenhower to call him the best driver of troops in combat on the Allied side, while it caused the German High Command to fear him in the field above all Allied army commanders.[5]

O. P. Weyland, 17 years Patton's junior, was born in 1903, 100 miles east of Los Angeles in blue-collar Riverside the second son of an English mother and a German immigrant father, who was a musician turned itinerant farmer. In 1919, after attending a number of public schools in southern California and in Corpus Christi, Texas, he enrolled at Texas A&M University, graduating with a degree in Mechanical Engineering in 1923 as a member of the Reserve Officers Training Corps (ROTC). After graduation, and before deciding on an aviation career, he entered the United States Army Air Service as a reservist and went to work for Western Electric in Chicago, Illinois. The engineering profession, as Weyland recalled later, offered little excitement in a cold climate, and he was bitten by the flying bug while serving reserve weekends at Chanute Field. In 1924, he exchanged reserve status for a regular Army commission and began flight training at Kelly Field, Texas. Weyland impressed his contemporaries as quiet, competent, and altogether without a flair for the dramatic.

General Patton with troops of the 3d Infantry Division awaiting evacuation from Sicily by air.

Air Power for Patton's Army

After completing flight training in 1925, Weyland joined the 12th Observation (Reconnaissance) Squadron at Fort Sam Houston where he first acquired his knowledge of, and appreciation for, tactical air requirements in support of army ground forces. He went on to command the 4th Observation Squadron at Luke Field, Hawaii, an assignment he chose over a more prestigious post in the Philippines because it offered tactical work with a full-strength army division. In the mid-1930s he returned to Kelly Field as an instructor pilot and chief of the observation section. His early career involved more than operational flying assignments; he attended the Air Corps Tactical School at Maxwell Field, Alabama, in 1937 where his field experience with the ground forces helped him graduate as number one in his class. Two years later, in 1939, he completed the Army's Command and General Staff School course at Ft. Leavenworth, Kansas.

During the first years of World War II, Weyland served with the renamed Army Air Forces primarily in Washington, D.C. There, he was assistant to the chief of the National Guard Bureau's Aviation Division before receiving assignment to AAF headquarters, first as Deputy Director for Air Support and then as Chief of the Allocations and Programs Division in the office of the Assistant Chief of the Air Staff. The latter assignment placed him at the center of the aviation buildup, which included work on AAF air inspector Maj. Gen. Follett Bradley's plan for building up the forces needed in the cross-channel invasion. This brought him into frequent contact with the AAF commander, General Arnold.

Between Washington assignments, Weyland commanded the 16th Pursuit Group in Panama, which flew P–40s, and in 1941 he became chief of staff of the Caribbean Air Force (later redesignated Sixth Air Force). Weyland's

Maxwell Field, Alabama, served as the home of the Air Corps Tactical School, where much of the tactical air doctrine developed in the 1930s.

commander, Gen. Frank Andrews, judged this air force to be "tied to no island commanders but available for a concentrated blow for the defense of the Canal."[6] Here, Weyland helped army leaders understand the benefits of centralizing limited air resources in support of ground forces scattered over a large geographic area. With that background and experience and promoted to brigadier general in late 1943, he assumed command of the 84th Fighter Wing. On January 1, 1944, he flew with it to England and a new assignment.

Shortly after arriving in England, the U.S. Army notified General Weyland that he and the XIX TAC would be paired with the Third Army and its famous commander, General Patton. Privately, Weyland harbored doubts about this assignment with the fiery army commander—an understandable reaction given Patton's public criticism of Allied air support in North Africa. Long afterward, Weyland recalled that he had no idea why he and his organization were paired with Patton and his Third Army, though he admitted: "nobody was just real anxious to do it [join Patton]. Nobody was *really envious* of me, let's put it that way."[7] Doubtless at that moment in time, Patton's air subordinate could anticipate confrontations if he were to avoid being bulldozed on major air employment decisions. Despite his quiet demeanor, however, Weyland could be entirely forceful when the occasion demanded. General Ferguson, his operations officer in World War II, perhaps described him best as "soft-spoken but a firm and very capable fellow."[8]

Whatever Patton's feelings might have been on learning that his air commander lacked any combat experience, Weyland brought to the partnership a military background in tactical operations that would prove excellent preparation for the air-ground mission that both would face. Though without combat experience, he had spent his entire career in tactical aviation and he understood air-ground requirements better than most did in the AAF. He also brought to the XIX TAC extensive experience in fighter operational units, a thorough knowledge of tactical air operations, and a willingness to cooperate in fixing air-ground objectives. Moreover, his subdued, more taciturn personality complemented Patton's flamboyancy. If Patton dramatically referred to their association as "love at first sight," the two commanders apparently understood one another and got along well from the very beginning.[9] Certainly, by war's end, Patton emphatically would describe Weyland as "the best damn general in the Air Corps."[10]

Even before Patton and Weyland began assembling and training the troops of their new commands for combat in France, however, Allied leaders had to organize the multinational air and ground forces that would be required in that enterprise to function in concert.

Organizing Allied Assault Forces for Joint Operations

Plans for a cross-channel invasion of France received renewed impetus when Allied leaders met at Casablanca, French Morocco, back in January 1943.[11] At that time in North Africa, Allied forces were firmly established and had begun to close on German and Italian forces in Tunisia from the east and west. In Russia, Soviet forces had halted the Germans' eastward onslaught at Stalingrad. In the Southwest Pacific, Americans had seized the initiative at Guadalcanal and seemed to have checked Japanese expansion. The Allies now had reason to believe that the tide of war at last had turned in their favor. To ensure the success of an assault on Fortress Europe, the Allies at Casablanca decided to stress operations against the German submarine menace, intensify pressure on German resources and morale through the so-called Combined Bomber Offensive originating in the United Kingdom, and clear the Mediterranean Sea by invading the island of Sicily.

Following the Casablanca Conference, the Combined Chiefs of Staff undertook a detailed study of cross-channel invasion requirements based on the tragic landing made at Dieppe, France, by British and Canadian forces in August 1942. A successful assault, the study concluded, required a massive landing of forces at a beachhead that offered access to a key port with a good road network leading into the French interior and within range of Allied fighter aircraft in England. For that beachhead, planners chose the Normandy coast

President Roosevelt and Prime Minister Churchill at Casablanca.

between Cherbourg and Caen. In March 1943 they submitted their analysis to British Lt. Gen. Frederick E. Morgan. His appointment as Chief of Staff to the (as yet unnamed) Supreme Allied Commander (COSSAC) charged him to plan for an invasion as early as possible in 1944. Allied leaders at the Trident Conference in Washington, D.C., in May 1943 set that date for May 1, 1944, and confirmed it in November at the Teheran Conference in Iran. In late January 1944 however, shortly after General Eisenhower's arrival in London to assume the duties of Supreme Commander, he and British General Montgomery, the designated ground forces commander for the invasion, decided to expand the COSSAC's initial plan in Operation Overlord. They opted for an assault force strengthened, from an original three to five army divisions and a landing-frontage expanded from an original 25 to 40 miles. To procure the needed equipment for Overlord—especially landing craft—Eisenhower postponed an Allied landing on the Mediterranean coast of southern France by one month.

Providing for the necessary tactical air support for the invasion, Allied leaders moved the Ninth Air Force from Egypt to England. On the continent, the Ninth would pair with the 12th Army Group in the American contribution to the air-ground campaign in Northwest Europe. More significantly for tactical air developments, however, the Ninth's subordinate tactical air commands would work directly with armies in the field.[12] Commander of Eighth Air Force's VIII ASC, Brig. Gen. Robert C. Candee, offered a proposal for the specific organization of the Ninth Tactical Air Force (TAF) in England to include a bomber command, a fighter command with two air support divisions, an air service command, and for the first time, an air defense command and an engineer command. The Air Support Divisions, later renamed Air Support Commands, then Tactical Air Commands, would support designated field armies on the continent. Candee's proposal reflected the findings of a seminal Eighth Air Force observers' report, *Air Operations in Support of Ground Forces in North West Africa (March 15–April 5, 1943)*.[13]

Colonel Philip Cole prepared the air operations observers report in the spring of 1943. Cole, with a small team of Eighth Air Force officers, visited and assessed the air-ground operations of 18 separate North African theater units. Their report considered especially the experience of the RAF's Western Desert Force and the U.S. XII ASC—redesignated XII TAC in April 1944—which had collocated its headquarters near General Patton's II Corps advance headquarters. The 42-page report focused on tactical air organization, control, and operations. The team found that FM 31–35 (1942) provided the organizational guidelines (the division of headquarters into rear and advance elements, in particular) which allowed the air commander's staff to keep up with and remain collocated with the army in mobile operations. Air-ground teamwork also received high marks for "close and continuous" liaison among the air headquarters and the supported ground units. The observers described the critical importance of "air support parties" assigned to army units, and of the

army counterpart liaison officers stationed at each air field. The air commander, in keeping with FM 31–35, retained responsibility for directing aerial units that flew against targets requested by the ground forces.[14]

Indeed, the Cole team's report became the blueprint for organizing, commanding, and controlling tactical air operations in Northwest Europe. To control air resources, the team recommended that the air organization with tactical units assigned to support ground forces "be organized as an Air Force headquarters."[15] To ensure that proper control could be exercised, this tactical air headquarters at any one time should be allocated no more than two wings of six fighter groups. The team recommended an increase of 100 percent (from 8 to 16) in the number of air support parties assigned directly to the Air Support commander in addition to a battalion of Aviation Engineers. Successful air-ground military operations in North Africa had required additional air support parties in the field and the ambitious airfield construction program contemplated for mobile military operations on the continent warranted engineers assigned to each field air command. The report also urged that these "principles of Air Support organization and control evolved by the Western Desert Force RAF and modified to suit American organization and procedure, as represented by XII TAC, be accepted as the current model for the organization of such units."[16] Ninth Air Force would adopt all of these recommendations for the campaign in Northwest Europe.[17]

A few months after Cole submitted his report, American and British leaders met at the Quadrant Conference in Quebec, Canada, in August 1943, and confirmed the cross-channel invasion, now codenamed Overlord, for the spring of 1944. The Allied leaders also called for a massive air offensive, termed Pointblank, designed to destroy German air forces prior to the landings, and creation of an Anglo-American tactical air force to be known as the Allied Expeditionary Air Force (AEAF). The U.S. component of this command, Ninth Air Force, thus would be largely independent of and separate from the Eighth Air Force and other strategic air forces.[18] The Ninth Air Force, which moved from Egypt to England on October 16, 1943, under the command of Maj. Gen. Lewis H. Brereton (**Chart 3**), initially consisted of a small headquarters contingent from the Ninth and elements of the Eighth Air Force's VIII ASC, including Colonel Cole. A vast influx of new, largely inexperienced personnel as yet untested by combat accounted for the bulk of this tactical air force, which over the next seven and a half months grew to more than 170,000 officers and enlisted.

The Ninth Air Force, however, depended on the Eighth for basic support. Administrative matters remained centralized under the Eighth Air Force, which dominated the AAF in the United Kingdom and, after January 1, 1944, its successor, the United States Strategic Air Forces (USSTAF) in Europe. Supply officers in Weyland's XIX TAC repeatedly complained that logistic bottlenecks could have been prevented had they been able to establish an inde-

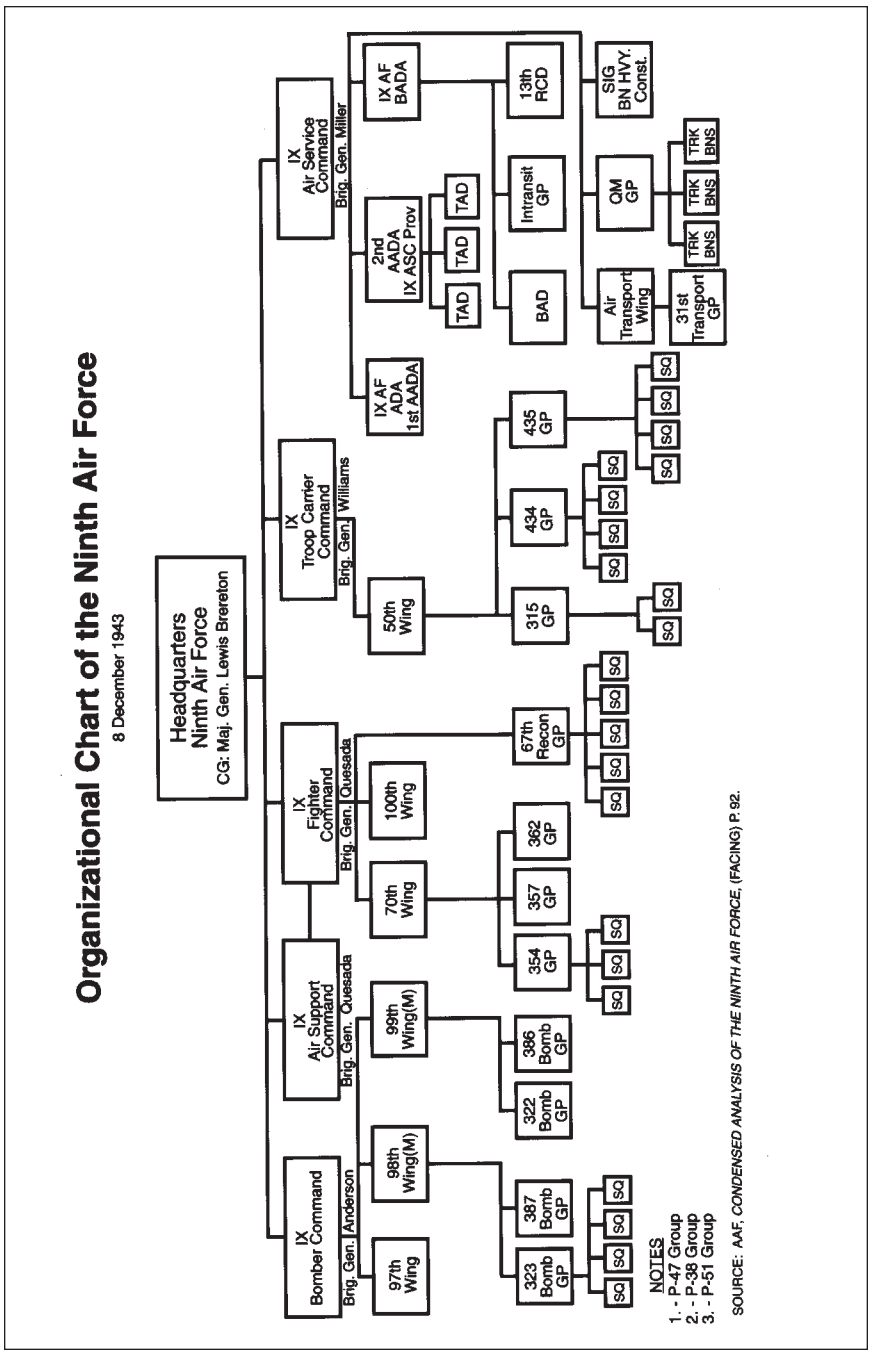


Chart 3
Organizational Chart of the Ninth Air Force, December 8, 1943

Maj. Gen. Lewis H. Brereton

pendent administrative channel directly to AAF supply agencies stateside. As for operational matters, the Ninth like its British counterpart the Second TAF, looked to the Anglo-American AEAF for direction. Here, the issue of command prerogatives appeared much less clear.

Two weeks after the Ninth Air Force arrived in England, on November 1, 1943, the Allies activated the AEAF under the leadership of Air Chief Marshal Sir Trafford Leigh-Mallory, the most controversial air commander on the Allied side. Leigh-Mallory reportedly was possessed of a difficult personality. Yet, personality clashes normally reflect issues of larger importance. In this case, from the time of his appointment, Leigh-Mallory and the AEAF became the focus of a complex tug-of-war over command authority involving not only American tactical air forces but all U.S. and British strategic forces as well. Recent studies have been more sympathetic to this British officer in view of the challenges he faced.[19] Simply put, Leigh-Mallory believed that he should have the authority to plan and direct all Allied strategic and tactical air forces in support of the invasion, rather than simply to coordinate plans and operations of the AAF's Ninth Air Force and the RAF's Second TAF.

General Spaatz, USSTAF commander, for one, thought otherwise and opposed the use of strategic air forces against tactical targets in Normandy. Heavy bombers, he declared, should be employed against strategic targets in Germany. Moreover, as General Brereton's diaries make clear, American airmen resisted placing U.S. tactical air forces under a British officer.[20] These issues festered throughout the winter of 1943-1944 as Leigh-Mallory, General Eisenhower, and the strategic bomber leaders argued over the use and control

of heavy bombers. Eventually, Eisenhower received the authority he needed to use the strategic bombers in support of Overlord objectives. But in tactical matters, the AEAF's authority was more clearly drawn. According to the Joint Operations Plan for the invasion, Ninth Air Force would "execute air operations in the U.S. sector as directed by AEAF" and together with Second TAF, would support ground forces "in coordination with AEAF."[21] As it turned out, the various tactical agencies cooperated reasonably and efficiently after the invasion.

Jurisdictional disputes among the top commanders, however, seldom affected leaders at lower echelons who, like General Weyland, had excellent relations with their fellow airmen and army counterparts. In any case, Weyland and his colleagues had challenges enough to face in building up their forces, training for the invasion, fighting enemy air forces in Operation Pointblank, and participating in the attacks against German rocket and buzz bomb launching sites on the continent.

Manning and Equipping the Assault Forces

General Weyland's XIX TAC, headquartered at Aldermaston Court, near Reading in Berkshire, in February 1944 consisted of 30 officers and 77 enlisted men—but it counted no pilots or aircraft. The XIX TAC was a subordinate element of the IX Fighter Command led by General Quesada, recently arrived from the Middle East with the original Ninth Air Force contingent. The Ninth Air Force was a tactical air force, and its IX Fighter Command controlled the

Air Marshal Leigh-Mallory presides at a squadron briefing.

fighter and fighter-bombers employed in the close air-support role. Both airmen, in effect, wore more than one command hat. Quesada commanded the IX Fighter Command with its two subordinate air support commands, the IX and XIX TACs, and commanded the IX TAC, while Weyland served as his deputy commander at IX Fighter Command headquarters at Uxbridge and as commander of the XIX TAC.

General Quesada directed the equipping and training of both air support commands. Quesada's IX TAC received priority over Weyland's XIX TAC for personnel and equipment during the buildup in England. The former support command, augmented by fighter groups later destined for Weyland's command, would be the first to deploy to airfields in France in support of the lodgement and breakout. Weyland's XIX TAC would become operational on the continent, along with the Third Army, *after* the breakout. Initially, air leaders planned to inactivate IX Fighter Command once the two tactical air commands, as they were redesignated in April, had grown to full combat strength. The fighter command proved too valuable as an operational coordinating agency, however, and did not inactivate until the last fighter-bomber group deployed to the continent in late July 1944.[22]

Generals Weyland and Quesada also contrasted with respect to personality, leadership style, and the experience each brought to the European theater.[23] Unlike Weyland, Pete Quesada, to use his own words, had an impulsive personality. A hands-on leader, he enjoyed flying combat missions with younger pilots (he was 40 years old in 1944). His assignments included duty as an aide to key Air Corps and political figures and as chief of the Air Corps' foreign liaison section. He had attended courses at the Air Corps Tactical School and the Army's Command and General Staff School when, as commander of XII Fighter Command, he left North Africa for England, he brought to his new Ninth Air Force post tactical operations experience, an appreciation for technical innovation, and tremendous energy and drive. Responsible for directing all tactical air training and operations for fighter-bomber groups in the United Kingdom, he would lead IX TAC in operations supporting the First Army, commanded initially by General Bradley in Normandy and, after the breakout, by General Hodges. The First Army would operate on the Third Army's left flank in the drive across France.

If Quesada had arrived in England several months before Patton, and if his combat experience made him the best choice to direct training in England and tactical air operations in Normandy, army and air force leaders might have deliberately avoided putting these two headstrong personalities on the same air-ground team. By pairing Weyland and Quesada, these complementary personalities were able to contribute to teamwork at IX Fighter Command. Both brought to their commands extensive tactical experience, a willingness to innovate, a commitment to air-ground objectives, and the drive to make the cooperative effort successful.

As for Weyland's XIX TAC's staff structure, administratively it represented a normal air support command organization including a chief of staff, deputy chief of staff, and four assistant chiefs of staff to head the main branches, that is, personnel (A–1), intelligence (A–2), operations (A–3), and supply (A–4). After a number of personnel changes in the spring of 1944 Weyland (the ROTC graduate from Texas A&M), assembled a team that remained mostly together throughout the entire campaign. His chief of staff, Col. Roger J. Browne (West Point, class of 1929), and his deputy chief of staff, Col. James F. Thompson, Jr. (West Point, class of 1932), brought to their posts extensive prewar experience as pursuit and observation (reconnaissance) pilots. The other officer most directly involved in flying operations, Operations Chief Col. James Ferguson, rose rapidly after entering the Air Corps in 1936 from a civilian school and, like General Weyland, had received a regular Army commission. He arrived in England as commander of the 405th Fighter Group. In the forthcoming campaign, Colonel Browne would command the XIX TAC's rear headquarters while Colonel Ferguson would direct activities from the command's advance headquarters, and Colonel Thompson would form a small X-Ray (small, mobile command post) detachment to keep pace with General Patton's rapidly moving command post echelon during the dash through France. The remaining support branch chiefs consisted of Maj. Robert C. Byers (A–1), Lt. Col. Charles H. Hallett (A–2), and Lt. Col. Howard F. Foltz (A–4), all of whom belonged to the Air Corps rather than the regular Army.[24]

Among the many important attached units supporting the XIX TAC, the communications and engineer troops proved indispensable. The command's operations turned on effective communications and two battalions of Signal Corps personnel under the command of Col. Glenn C. Coleman (West Point, class of 1938) constructed and operated equipment for routine command communications as well as the radios and vehicles used for the air support nets. Over the course of the campaign, Colonel Coleman's troops developed four communications networks. The command net linked the command with the wings and groups as well as adjacent units; the control net centered on the Tactical Control Center, linking it with the command's radars, radio intelligence unit, and ground observers; the liaison net tied the command to its tactical air parties at the Army's corps, divisions, and combat commands; and finally, the air-ground net included aircraft, ground stations at airfields, and tactical air parties that moved with the army. The four networks relied on five types of communication. Air-ground communications used VHF radio while point-to-point communications employed land-line telephone and teletype, FM radio telephone and teletype, HF radio, and both ground and air couriers.[25]

The engineers comprised the second major support group. Based on a recommendation from Colonel Cole's Eighth Air Force Observers Report, Ninth Air Force's Engineer Command assigned brigades consisting of self-contained aviation battalions of 27 officers and 760 enlisted men directly to the

Major General Quesada

tactical air commands. Fortunately for the XIX TAC, Col. Rudolf E. Smyser, Jr., commanded the 2d Aviation Engineer Brigade. A West Point graduate (class of 1928), Smyser had been a driving force in developing aviation battalions in the prewar Air Corps and had served for two years as Eighth Air Force's Engineer Chief. During that time he had visited the North African theater and gained first-hand knowledge of engineering construction requirements for mobile warfare conditions. In the coming offensive, elements of his battalions would construct or refurbish a total of 43 airstrips using six different types of surfacing material.[26]

In the spring of 1944, while Ninth Air Force's engineer and signals officers labored to form operational units for the tactical air commands, General Weyland wrestled with major command problems of his own. Beginning in February 1944, Weyland faced four simultaneous challenges: first, building XIX TAC with the required personnel and equipment; second, properly training all members of the command; third, conducting flying operations in support of Eighth Air Force bombers; and, finally, participating in air-ground training with General Patton's Third Army. Because Quesada's command received priority for personnel and equipment, the XIX TAC remained a small force until the spring of 1944. By the end of March, it still totaled only 3,223 personnel in contrast with IX TAC's 27,093. The command's personnel problems extended beyond insufficient numbers to fill the authorized billets. Technical specialists remained in short supply, and in some cases, the table of organization did not include essential functions. One of the most glaring omissions involved air liaison officers to work with the army. Recommendations like those of Colonel Cole's North African Campaign analysis and Patton's lessons learned report on

the Sicily operation seem to have escaped the attention of planners at AAF headquarters in Washington, D.C. Air Staff officials failed to foresee the need for airmen in air support parties who would work together with army operations officers down to division level. To meet that need, the tactical air command had to assign them from existing authorizations, which intensified the overall shortage of personnel in Weyland's command.[27]

Within two months, by the end of May 1944, General Weyland's manning situation improved considerably. On the eve of D-Day, XIX TAC had grown from 3,232 to 11,965 officers and enlisted men—though it was not yet half the size of General Quesada's IX TAC. The major increase in personnel occurred when the XIX TAC received its first operational flying units in April 1944.

During the Second World War, in contrast to later practice, it was the fighter group rather than the wing that served as the primary flying organization.

100 Fighter Wing				**303 Fighter Wing**		
354 FG	358 FG	362 FG	363 FG	36 FG	373 FG	406 FG
(P–51)	(P–47)	(P–47)	(P–51)	(P–47)	(P–47)	(P–47)

Then, wings served a coordination and communications function linking the fighter groups with the headquarters and its associated tactical control center. During the campaign in France, the command found the wings to be an unnecessary administrative echelon and recommended their elimination in future operations. Normally, each fighter group consisted of three squadrons for a total of approximately 200 officers, 800 enlisted, and 75 aircraft.[28]

The rugged, well-armored P–47 Thunderbolt proved to be an ideal fighter-bomber.

Air Power for Patton's Army

The 100th Fighter Wing joined Weyland's command in late March 1944 and became operational on April 15. Its groups already had been in the European theater for as long as four months under IX TAC control for training and operations. The 354th Fighter Group, in fact, had been the first operational fighter group in Ninth Air Force and proudly called itself the Pioneer Mustang Group. Units of the 303d Wing, however, joined the command directly from the States and needed two to three weeks to become operational. Even after both wings achieved operational status in early May 1944 they continued to be assigned to IX Fighter Command and IX TAC for flying operations, rather than to the XIX TAC.

The XIX TAC had the distinction of being the only tactical air command in the theater that flew P–51 aircraft. Both the P–51 Mustang and P–47 Thunderbolt, or Jug, had been designed initially as high-altitude fighters. The P–51's six .50-caliber machine guns, superior maneuverability, and extended range when equipped with drop-tanks made it the ideal aircraft for long-range escort and fighter sweeps. Because Ninth Air Force visualized the need for at least a modest P–51 capability to counter the *Luftwaffe* threat, it retained two groups, the 354th and 363d Fighter Groups. Although both belonged to Weyland's command, the great flexibility of tactical air power made them readily available, as required, to assist the operations of other Ninth Air Force tactical air commands. The P–51 proved less capable as a fighter-bomber. Its liquid-cooled, in-line engine made it more vulnerable to antiaircraft flak and even small arms fire at low altitudes, and during steep dives it tended to develop stability problems. The well-armored P–47, on the other hand, proved to be an ideal fighter-bomber. Its ruggedness, turbo-supercharged air-cooled radial engine, ample bomb-carrying capability, ease of operation and maintenance, and lower vulnerability to flak damage readily offset its high fuel consumption and restricted forward visibility. Above all, the Thunderbolt's eight .50-caliber machine guns gave it outstanding firepower for strafing—the most important of the fighter-bomber air support roles.[29]

The original Ninth Air Force plan called for 1,500 tactical aircraft, enough to equip each group with 75 planes. The plan provided for an additional 10 aircraft in reserve locally and a further 15 in depot reserve. Planners predicted a 30 percent attrition-replacement rate for the campaign. However, normally two months elapsed before a group received its full complement of 75 aircraft. Even then, the new planes usually arrived without their full quota of associated equipment or requested modifications, which meant that achieving operational capability might be delayed as long as six weeks.[30]

At XIX TAC headquarters, the officers resented their preinvasion *stepchild* status and liked to blame Eighth Air Force's administrative control of Ninth Air Force logistics for many of their problems. They believed supply officers in the strategic forces failed to appreciate the special needs of a tactical force and did not submit their requirements for modifications promptly to

the appropriate organizations stateside. Even so, given the four-month period from the time Weyland assumed command until D-Day, one marvels that, despite the speed and the scale in the buildup of forces, the bureaucratic snafus encountered in so enormous an effort never became insurmountable.

Training Underway

To prepare for cross-channel operations, XIX TAC personnel participated in individual and group training programs from the time they arrived in England until they moved to the far shore. Flexibility and mobility became instant watchwords. Beginning in December 1943 Ninth Air Force–wide ground training stressed mobile command post communications exercises. Aircraft warning and control units had no time to take part, however, which severely limited the scope and realism of this training. The results seldom pleased evaluators. As one noted in early 1944, "the most that can be said for this exercise is that enough mistakes were made to warrant the doubling of efforts for further Command Post Exercises."[31] In fact, the command post exercises continued until the spring, when XIX TAC could issue standard operating procedures for mobile, combined operations.

Ninth Air Force aircrews participated in an especially rigorous flight training program, General Weyland's second command challenge. Ground orientation training for new pilots emphasized airdrome procedures, communications, and minor aircraft maintenance and refueling exercises designed to prepare aircrews for the austere airstrip conditions expected in highly mobile combat operations on the continent.[32] Flight training stressed close-air bombing techniques. When new groups began arriving at the end of 1943, General Quesada immediately focused this program on dive-bombing, skip-bombing, and low-level attack training. Despite their stateside preparation, new pilots required many additional hours to master dive-bombing techniques in the P–47. Moreover, their skills deteriorated because flying operations in early 1944 called for them to provide bomber escort rather than to perform low-level interdiction missions. Characteristically, Quesada wasted no time in attacking the problem on several levels. He selected two experienced officers from the North African Campaign and sent them to operational groups and to RAF Millfield, which specialized in training flight leaders in low-level attack procedures. As newly arrived P–47 pilot Lt. John J. Burns recalled, shortly after arriving in England in March 1944 he checked-out in his airplane and then spent late March and April at "Clobber College" at Atcham, practicing dive-bombing techniques when not flying operational missions. Quesada also established a research project at Salisbury Range where a team of pilots and civilian specialists determined the best bombing techniques for reducing particular targets.[33]

Air Power for Patton's Army

Operational flying became Weyland's third major challenge during the preparation phase. Although groups from his 100th Fighter Wing had been flying against the enemy since late 1943, until February 1944 only P–51s flew bomber escort and photo and weather reconnaissance missions. On February 3, 52 P–47s joined 71 P–51s in support of VIII Bomber Command aircraft attacking special targets, the high-threat buzz bomb sites in northern France and Belgium. Together with fighter sweeps, escort missions predominated with few exceptions until late March, when the Allies could claim air superiority in the skies over Europe.[34]

The main Allied effort to wrest control of the skies from the *Luftwaffe* began in earnest on February 19, 1944, with a six-day assault popularly known as Big Week. During this period, RAF Bomber Command and the U.S. Eighth and Fifteenth Air Forces flew more than 4,000 sorties against 23 airframe and three aero-engine factories in Germany. Supported now by sufficient numbers of the long-range P–51 Mustang fighter, the bombers could put all of Germany at risk, and together with the fighters, they dealt the *Luftwaffe* air defenses a severe blow. By March, Allied pilots found that *Luftwaffe* fighters often failed to challenge them and analysts estimated that the *Luftwaffe*'s western front fighter force of 1,410 in early January 1944 had been reduced by more than 500 planes as a result of Big Week and the subsequent air attacks against targets in France and Germany.[35]

With air superiority over France largely assured, air leaders in March 1944 increasingly sent P–47s over specific areas on the continent to dive-bomb and strafe interdiction targets of opportunity. Dive-bombing missions that month for the first time outnumbered bomber escort missions by 45 to 38. The number of high-altitude fighter sweeps, nonetheless, remained high for both tactical air commands because they provided good practice in orientation flying for newly arrived pilots. Fighter-bomber aircrews seemed overjoyed to be flying fewer escort missions for heavy bombers now that Eighth Air Force fighters were on hand in sufficient numbers. Their enthusiasm was quickly tempered by the danger and challenges of low-altitude interdiction missions. In a perceptive observation, a veteran airman observed: "Our pilots are learning what we learned in Africa—that air support work is a lot of hard work without the glory and the huge claims of destroying enemy aircraft that are obtained in escorting the heavy bombers into Germany." Yet, high-altitude escort and fighter sweep assignments were the most characteristic fighter missions, the ones most likely to produce the traditional dogfight. With air superiority, however, high-altitude encounter missions that produced dogfights became increasingly rare.[36]

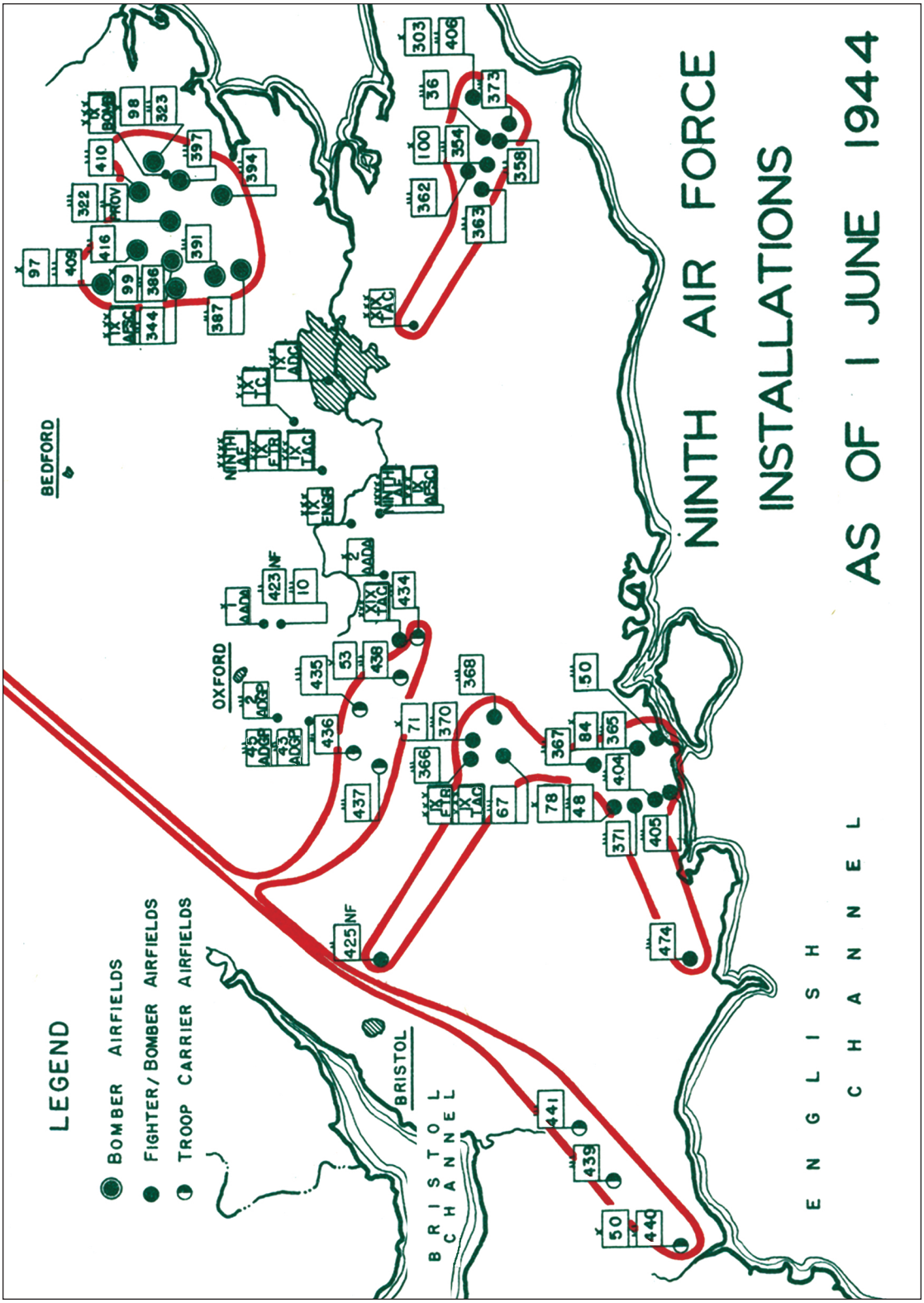
When the so-called Transportation Plan to isolate the Normandy battlefield began, May 1944 became the busiest flying month prior to D-Day. In one of the most contentious decisions of the spring, General Eisenhower overruled the commanders of both the RAF and U.S. strategic bomber forces and diverted them from an exclusive bombing of the German homeland to attacks

against transportation facilities in France. Of the five key target groups—coastal batteries, radar stations, marshaling yards, airfields, and bridges—aircraft of the two tactical air commands concentrated their efforts against the latter three. Attacks on railroad and highway bridges in northern France became crucial in preventing a timely German reinforcement of Normandy defenses. By D-Day, the Allied air assault on 12 railroad and 14 highway bridges over the Seine River delayed significantly all crossings below Paris.[37]

Well before D-Day, the Allies planned and directed all tactical air operations from Uxbridge, near London. In early February 1944, the AEAF and its two tactical commands, the Ninth Air Force and Second TAF, established their advance headquarters in Hillingdon House, Uxbridge, where a short time later IX Fighter Command's advance headquarters joined them. At Hillingdon House, the commands operated side by side with the RAF's 11 Group in a combined control center that directed all Allied fighter operations. Later, the British 21st Army Group and U.S. First Army personnel arrived at the center to coordinate the air-ground request system for the invasion. The combined control center later would direct air support operations on D-Day.[38]

In March 1944, General Weyland's command began controlling its own aircraft operations, thereby relieving IX TAC of operational responsibility. Early that month Weyland sent 10 officers and 14 enlisted signal corps controllers to the RAF's Biggen Hill sector control center for training. In late March, his command began moving flying units of both wings to advanced landing grounds (ALGs) in southeast Kent (**Map 2**). Deployed in full view opposite the Pas de Calais region of France, XIX TAC units comprised an important element of Operation Fortitude, the grand deception that convinced the Germans that the Allied invasion would come from "Army Group Patton," directed against Calais.[39]

The ALGs in Kent were designed to resemble those planned for the continent. They proved to be excellent sites for mobility training and for operating under rather stark conditions, but they lacked adequate housing, sufficient water supplies, and road networks able to support operations under combat field conditions. Even though the objective called for operating only with essential support, the airstrips still needed basic operating equipment and supplies. General Weyland spent a good part of his time in April and May 1944 working to obtain sufficient fuel supplies, to upgrade the road networks, and to improve overall operations at the ALGs. This would prove good practice for conditions he shortly would encounter in France.[40] By the end of May, XIX TAC had 2,000 men under canvas at each airstrip. Preparing the ALGs and conducting operational flying, however, made joint field training with Third Army more unlikely as D-Day approached. Even so, air-ground training progressed considerably over the late winter and spring of 1944.



Map 2
Ninth Air Force Installations: June 1, 1944

SOURCE: Rpt, AAF Evaluation Board, ETO, "Effectiveness of Third Phase Tactical Air Operations," p. 47, AFHRA.

The Issue of Joint Training

Joint training among air and ground elements, another major part of the training program, represented a fourth challenge for General Weyland. Because the Ninth Air Force had moved to England for the express purpose of conducting joint operations with field armies, training in air-ground organization and procedure was a priority. Although the planners stressed joint training from the start, Ninth Air Force officials seldom seemed to move from theoretical and organizational instruction to actual air-ground exercises in the field. A recent study attributes this condition to recalcitrant airmen who expressed traditional hostility toward ground support requirements: "the prewar attitude that close air support of ground forces was not a priority air mission still prevailed among flyers at all levels."[41] This conclusion overlooks entirely the real impediments to joint training and the wide degree of cooperation among air and ground leaders that existed in the last few months before Overlord. To be sure, Generals Arnold and Spaatz and other leading airmen remained sensitive to any perceived threats to air force control of air resources. After the North African experience General Follett Bradley, as well as Generals Arnold, Kuter, and others, believed the term *air support* was used too freely, implied a subservient role, and should be changed. That specific term did not appear in FM 100–20, Arnold advised his fellow airmen. The 1943 field manual prescribed "coequal operations," whereby "one force does not support the other in the sense the word was used in the past." He recommended substituting the phrase "in cooperation with" in place of "air support."[42] Such sentiments already had produced a notable change in terminology when, in April 1944 AAF headquarters redesignated all air support commands as tactical air commands. Indeed, all postwar XIX TAC publications on operations in Northwest Europe would refer only as to its aerial action being "in cooperation with" Third Army.[43] This emphasis on coequality and air prerogatives characterized the view in Washington that produced FM 100–20 at the close of the North African Campaign in 1943, and it would reemerge near the war's end. Army Air Forces leaders took their stand not on the practical lessons learned on the field of combat, but on doctrine as it was expressed in FM 100–20.

Fortunately for Overlord, airmen in the field paid scant attention to pronouncements that reflected doctrinal concerns in Washington, D.C. Indeed, General Quesada's IX TAC historian, writing in April 1944 on behalf of IX and XIX TACs, seemed to express the sentiment in England. Delays in beginning air support training did not occur as a result of "traditional hostility" toward the ground support mission, he observed, but rather resulted from the emphasis in early 1944 on escorting heavy bombers.[44] This escort experience reinforced air force doctrine that properly stressed gaining air superiority as the first priority. Following the successes of Big Week, and as planners adopt-

Lt. Gen. "Hap" Arnold, commander of U.S. Army Air Forces, on his way to visit the Ninth Air Force in the Middle East following the Casablanca Conference.

ed the Transportation Plan in April, Ninth Air Force fighter-bomber pilots found themselves flying interdiction missions—an airman's second priority according to doctrine—almost exclusively until the D-Day invasion. Consequently, precious little time could be spared for close air support joint training. Actual close air support operations would have to await ground combat on the continent. In short, theater requirements dictated specific air operations in preparation for the assault on France, and those requirements converged with the air leaders' doctrinal preferences. Together, they explain the failure to conduct extensive air-ground training much more completely than do simpleminded explanations that rely on a traditional hostility of airmen toward the close air support mission.

If the Overlord buildup, training program, and operational commitments precluded a sustained joint field training effort, at least the airmen could seize the opportunity to spread their understanding of air-ground responsibilities. They did so by providing lectures on joint operations, sending personnel on field trips to the combat zone in Italy, assigning air and ground liaison personnel to designated units, and when feasible, conducting small-scale air-ground activities. Tactical airmen implemented all of these measures cooperatively without reference to the formal doctrinal pronouncements of FM 100–20.[45]

As for the forces of Weyland and Patton, the special challenge to cooperative efforts in England resulted from their relatively late arrival in the theater and the lengthy period required for both organizations to become operational. Third Army officers spent most of their time supervising the buildup

and conducting essential orientation training for their personnel. Weyland's command, in the meantime, received its first fighter-bomber groups and began meeting a full operational flying commitment. Under these circumstances, in the time available, Third Army and XIX TAC officers could hardly be expected to conduct effective joint field training.

Both XIX TAC and Third Army officers realized the importance of acquiring airfields in France as rapidly as possible and they jointly identified potential sites. The Army intelligence officers based their analyses on reconnaissance photography obtained by the Ninth Air Force at Third Army's request beginning in March 1944. In another move designed to enhance cooperation and to provide realistic training for ground elements, on April 11 XIX TAC assumed responsibility from Ninth Air Force's Director of Reconnaissance for meeting all Third Army requirements.[46] In early May, Third Army assigned its first group of ground liaison officers to XIX TAC units. By the middle of the month, the army operations officer could affirm that those plans requiring air force support had been discussed with XIX TAC, with "many such conferences…held before plans were considered final."[47] Referring to joint air-ground efforts in England in early 1944, another air operations officer affirmed:

> Little was known at that time about the actual close Air-Ground Cooperation that we were later to experience. It was up to the Air-Ground Cooperation Officers themselves to work out ideas, try different methods, argue with one another, and finally arrive at a uniform method of operation.… When the time came for the actual invasion, the Air-Ground Officers who found themselves fifth wheels originally with the ground forces were by then an integral part of the unit upon which the Commanding General relied for maximum help.[48]

This officer's enthusiasm over the progress achieved by the liaison officers on D-Day was not entirely warranted, particularly since most had no joint field practice or combat experience in North Africa on which to rely.

As for Weyland and Patton, they appear to have spent relatively little time together before May 1944, the month before D-Day. Weyland, who knew of Patton's unhappy experience with air support in North Africa and believed that he "came up to England with a rather low opinion…of air power," acted to develop good professional and personal rapport with the army commander. He visited all of Third Army's corps and division headquarters, where he discussed the role of tactical air power and the lessons learned in the North African and Italian campaigns. In the latter part of May, Weyland and his intelligence and operations chiefs visited Third Army headquarters to review plans for their movement to France and projected joint operations in August.[49]

Weyland made a special effort to acquaint Patton directly with tactical air capabilities and the details of flight planning and scheduling. According to Weyland, his air base orientation program impressed Patton; moreover, his visit set the stage for effective XIX TAC–Third Army training in April and May and made possible the true partnership that emerged in the summer.

Patton did not visit XIX TAC bases until late in May 1944, and his correspondence refers only to a visit on May 27–28 to observe 354th Fighter Group P–51s return from an escort mission and to hear P–47 pilots of the 362d Fighter Group plan an interdiction mission against a bridge at Rouen. The airmen impressed Patton with the thoroughness of their flight planning and takeoff precision. To oblige General Weyland, Patton spoke to officers and enlisted men about the importance of teamwork, later observing how these activities "added greatly to the entente between the ground and air forces."[50] It must be added, however, that Patton already possessed a solid understanding and realistic appreciation of air power. He learned to fly in the early 1920s at Mitchel Field on Long Island during interludes in one of the polo seasons and he often flew a private plane during the interwar period. In the spring of 1941, Patton wrote to an airman friend: "I am personally getting so air-minded that I own an aeroplane." Late that summer he flew his own light airplane as the senior umpire in the Louisiana maneuvers of IV Corps. Thereafter, he experimented with the use of light planes in a variety of combat missions, which doubtless contributed to the Army ground forces adopting and employing them extensively in liaison and medical evacuation roles.[51]

In a larger sense, Patton certainly understood that air support had become critical to an Army that emphasized mobility over firepower. Indeed, with the rapid expansion of the air arm beginning in 1941, War Department planners made a conscious decision to provide the army primarily with light and medium artillery and to rely on tactical aviation for additional heavy artillery support. Significantly in North Africa, Patton went from the outburst at Gafsa for the support he needed, to praises in Tunisia for the tactical air support he received, knowing full well the role of this support for mechanized warfare.

Patton's after-action report on the Sicily campaign revealed a perceptive student of tactical aviation's capabilities and limitations.[52] During amphibious operations, for example, he advocated limited use of an air umbrella—and only *if* the "mastery of the air permits" air forces to maintain it to thwart counterattacks. His solution called for aircraft circling 10 minutes of every hour over sensitive areas at the front, with a secondary bombing mission assigned to them afterward. If these aircraft possessed radio communication with the air support unit on the ground, "any counterattack can be met from the air."[53] This novel approach to the controversial issue of a permanent, orbiting air umbrella would be followed in principle in the Normandy invasion *and* in practice by Weyland's XIX TAC in its support of Patton's rapid drive across France.

Patton readily accepted the proposition that controlling enemy activities in the air was "solely a function of the air," while interdiction or bombing ahead of the ground forces required teamwork for success through target selection from the ground side and a bomb line chosen in conjunction with air officers, one that was easily identifiable from the air. Patton's assessment of close air support deserves special mention for its realism. One should not "count on a very great effect" from air support, he said, until air units had trained extensively with ground forces. The airman's "primary mission was…attacking targets which are adversely affecting the progress of the ground troops [when] called for by the ground." Patton did not advocate control of the air forces by the ground commander, nor did he have any sympathy for ground officers and their troops who expected too much from the air arm. It would be "illusory" to expect fighter-bombers to destroy roads and railways, Patton conceded, because direct hits seldom occurred and, in any case, such targets required constant attention to keep them inoperable.[54]

Relying on his experience in Operations Torch and Husky, to improve air-ground support, Patton recommended extensive joint planning that would include the assignment of well-trained air staff officers to all division and higher G–3 operations sections, more extensive training for radio operators in air-support parties, and joint exercise training among air-support parties and pilots in units earmarked for combat.[55] Thus, in England, Weyland could arrive at a basic understanding with Patton about control over air operations with far less difficulty than he at first might have supposed. "I had full control of the air," Weyland, with some satisfaction declared later, "The decisions were mine as to how I would allocate the air effort."[56]

Considering the team, one might expect Patton to have ridden roughshod over his subordinate and junior air commander whose mission, after all, was to support his Third Army in the field. That did not occur, and Patton's response to Weyland's orientation program helps explain much about his air-mindedness. Patton expressed great interest in what he saw, complimented the airmen accordingly, and spoke about the importance of air-ground teamwork for future operations. If Patton possessed no direct command authority over Weyland and the XIX TAC, he praised them and appealed to their sense of mission. Patton nonetheless was a lieutenant general and Weyland a brigadier general in the same service, and a deferential, if not command, relationship always characterized their association. Beyond this, Patton realized that he had in Weyland an air commander who believed that ground forces deserved all the assistance his command could provide, an air commander who, if he had resources available, was willing to overlook convention and doctrinal precepts to provide that assistance whenever it was needed. Weyland always believed that Patton remained faithful to their original agreement, that the air commander would retain full control of the air forces, even if at times some Third Army staff officers did not. Because of the basic understanding and rapport

between the two commanders, the contentious issue of command and control of tactical aviation never became serious.[57] General Patton took pleasure in supporting the airmen and referred to the XIX TAC–Third Army association as the most outstanding example of air-ground cooperation in his combat experience. Others with more claim to objectivity would echo his sentiments.

Whatever the initial success and future promise of XIX TAC–Third Army cooperative efforts in the late spring of 1944, joint training on the whole continued to worry Allied leaders. In early May, as D-Day approached, General Montgomery, who commanded the invasion land forces, expressed his dismay in a letter to Patton—his Sicilian nemesis—and most likely in identical copies to other ground force commanders as well. He decried the apparent separation between the armies and their supporting tactical air forces in England. To link them into "one fighting machine," the two sides needed to go beyond paying lip service to the principle of cooperation and establish the actual procedures and methods necessary for success. Recalling the unity achieved in North Africa, he counseled Patton to consider establishing air and ground headquarters side-by-side, integrating air and ground personnel at all organizational levels, and never move his army without consulting his air headquarters. Indeed, Montgomery observed, an army should take no action before first asking: "How will this affect the air?" Every pilot supporting ground forces likewise had to realize his only function was to aid the army in winning the land battle. This meant "coming right down and participating in the land battle by shooting up ground targets." Air commanders were currently working hard on this aspect of the problem, Montgomery averred, and he urged Patton to give the matter his personal attention because much needed to be done and little time remained available.[58]

General Patton replied on May 7, the day after observing an "air circus" staged by Ninth Air Force for Third Army, one in which he went aloft for a flight in a Mosquito fighter. Patton promised Montgomery that he would do all he could to implement the proposals for air-ground cooperation despite current difficulties. His own "warm personal relationships with Air Force commanders…and the mutual understanding which we have," Patton declared, "will, I am quite sure, make our complete cooperation everything that you can desire."[59] Although collocating the air and ground headquarters would have to await movement to the continent, Patton promoted a Third Army–XIX TAC program of joint training that intensified in May.

General Bradley, at that time commander of the First Army, also criticized Allied air-ground training in the spring of 1944. He complained of the indifference shown by Ninth Air Force commander General Brereton when requested to participate in air-ground field exercises and training. "As a result of our inability to get together with air in England," Bradley said later, "we went into France almost totally untrained in air-ground cooperation." At the same time, however, he conceded that enemy rocket and buzz bomb launching

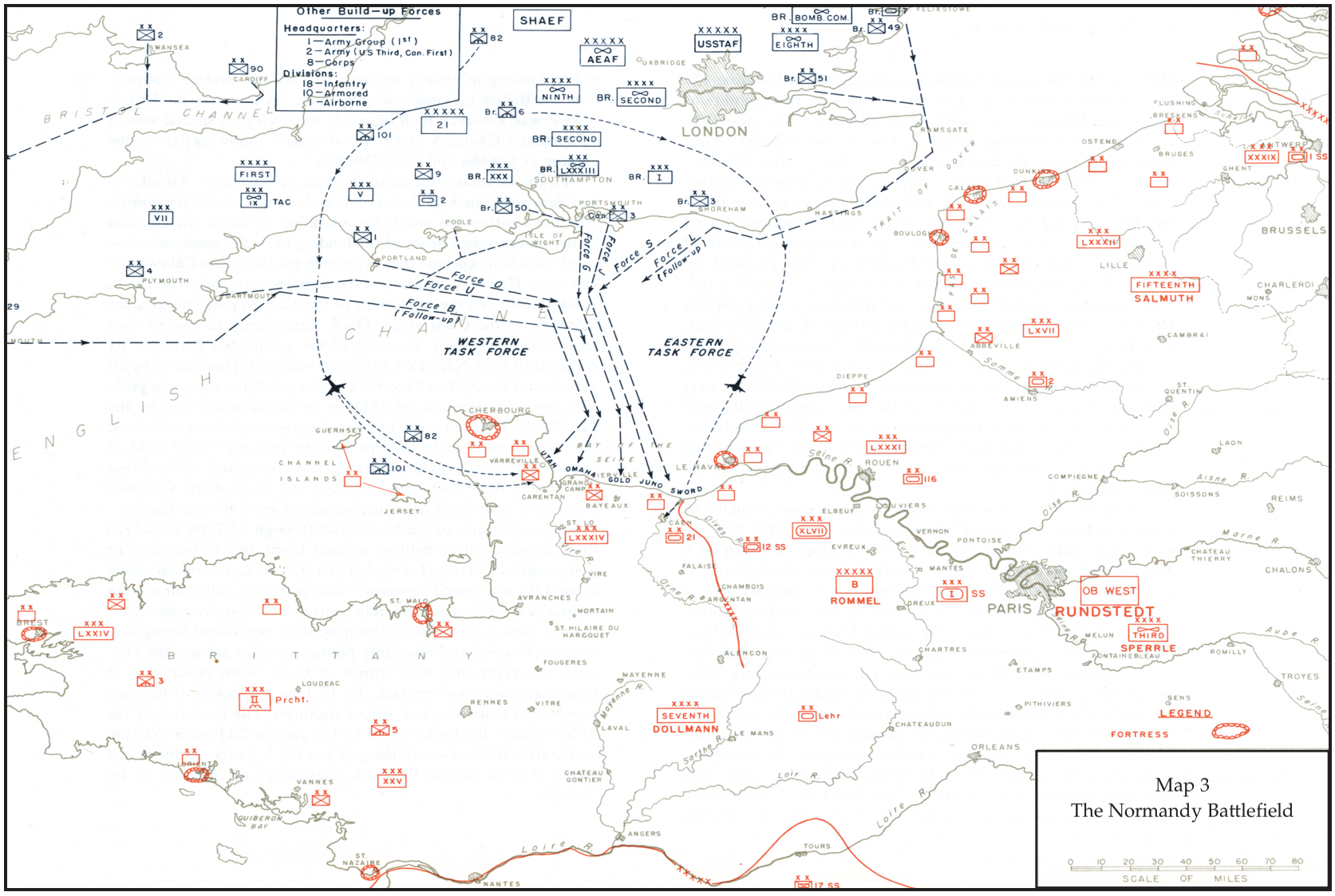
sites and other high-priority targets demanded a heavy flying commitment from Brereton's forces until May. Yet, when in the final few weeks before D-Day, Brereton notified Bradley that his air forces had now been released for training with the army, Bradley told him it was too late.[60]

Important Allied operational flying commitments, which continued until the time of the actual invasion, must be judged the most crucial roadblocks to effective air-ground training in England prior to D-Day. These commitments conformed to tactical air power mission priorities—air superiority first, then isolation of the battlefield. By achieving them in the spring of 1944, the air arm insured that the invasion would succeed and that the close air support mission could become a major focus of tactical air operations on the continent. If in 1944 the best efforts of air and ground leaders to pursue joint training in England fell well short of the mark, it occurred for reasons other than doctrinal disputes or personal disagreements. Between Third Army and XIX TAC, however, considerable joint planning had taken place, and a wide variety of joint training contributed to better understanding on both sides.

Normandy: On the Job Training

Final plans for the great cross-channel assault in the late spring of 1944 called for the British Second Army and the U.S. First Army to land 176,000 troops on the first day at five designated beaches on the Normandy coast between the Seine River and the Cherbourg peninsula (**Map 3**).[61] British and Canadian forces assaulting Sword, Juno, and Gold beaches on the eastern edge of the channel landing zone in the Bayeux-Caen area were to move inland and converge on Caen, whose capture then would open the most direct path to Paris. American forces assaulting Omaha and Utah beaches on the western edge of the channel landing zone were to link up with their British and Canadian allies along the coast and then move west and north to capture the Cherbourg peninsula with its important port city. The British 6th Airborne Division would drop to earth northeast of Caen to protect the British flank, while the American 82d and 101st Airborne Divisions would perform a similar role on First Army's flank near Ste-Mère-Eglise.

In the channel, Allied naval forces were to provide transports for troops and supplies as well as fire-support ashore to neutralize enemy positions. Overhead, a continuous, orbiting Allied air umbrella would counter *Luftwaffe* attacks, while additional fighters would fly close air support missions to help the progress of the ground forces ashore. The Allies hoped the major air interdiction operation, intervention by the French Resistance underground army of 200,000, and fear of the real invasion at Calais would prevent the Germans from mounting an overwhelming counterattack against the first troops ashore in Normandy.



Map 3
The Normandy Battlefield

SOURCE: Vincent J. Esposito, ed., *West Point Atlas of American Wars*, V. 2, Map 48, (New York: Praeger, 1960)

The Allies also counted on some uncertainty and confusion among German commanders to aid in Overlord's success. Field Marshal Gerd von Rundstedt, *Wehrmacht* commander in chief in the west, favored a mobile reserve to thwart an Allied amphibious attack, unlike his nominal subordinate, Army Group B commander Field Marshal Erwin Rommel. Specifically charged with defending the channel coast with the Seventh Army in Normandy and Brittany, and with Fifteenth Army in the Pas de Calais region, Rommel advocated an extensive array of relatively simple coastal defenses as the best response. Rommel's experience in North Africa convinced him that Allied air superiority would render a mobile reserve ineffective.

Both *Wehrmacht* commanders, however, faced additional constraints from the Reich's Chancellor Adolf Hitler and his staff in Berlin, whose claims on military prerogatives embraced decisions on troop disposition and movement in the field—military prerogatives normally reserved to field commanders. In this regard, Allied leaders hoped their elaborate deception plan would convince Hitler to keep the stronger Fifteenth Army positioned near Calais well after D-Day to face the expected assault from Army Group Patton. In early June, the German Fifteenth Army contained 19 divisions, with five Panzer divisions back-stopping it. The German Seventh Army, on the other hand, comprised 13 divisions, but only six were stationed in Normandy, and only one Panzer division back-stopped them. Two of its Panzer divisions were still in southern France. As for the *Luftwaffe*, Allied intelligence officers believed that it could not play a decisive role during the invasion because the Allied air assault in late winter and early spring had left half of the estimated 400 *Luftwaffe* fighters in France nonoperational. Nevertheless, despite having massed the largest amphibious force in history against an enemy severely weakened after four years of warfare, an Allied success in securing a lodgement in Normandy remained far from assured.

No one realized the risks involved in Overlord more keenly than did Supreme Commander General Eisenhower, who elected to launch the invasion on June 6, one day later than planned and in spite of bad weather. D-Day events on Omaha beach, in particular, almost convinced Eisenhower and Bradley to call off the assault. High seas and poor visibility scattered American troops and they unexpectedly faced murderous fire from the crack German 352d Infantry Division, which, unbeknownst to Allied intelligence, had been in position for the previous three months. Despite suffering more than 2,000 casualties at Omaha, the Americans by nightfall had 34,000 troops ashore on a narrow strip of land less than two miles deep. German resistance at the three British beaches also proved tenacious, while American airborne units that landed behind Utah beach lost 2,500. Only at Utah did the Allies get ashore without difficulty. Tenacity and good leadership helped the Allies gain toeholds on all five beaches by the end of D-Day. During succeeding days, the Allies would continue to bring troops and supplies ashore and extend the lodgement area while

the German High Command, still believing Calais to be the main landing site, held the Fifteenth Army in place for an invasion that never came.

The period in Normandy from D-Day, June 6, to August 1, 1944, served the Ninth Air Force in many ways as a practical laboratory in which airmen and ground force officers experimented with joint air-ground methods and techniques. In effect, they acquired on-the-job training. Initially, the Allies planned to control all tactical air support for the invasion from the Uxbridge headquarters in England. Accordingly, Leigh-Mallory's AEAF was authorized to direct the air effort by coordinating the responsibilities of the two tactical air forces, the Ninth and the Second TAFs. As the invasion began, Ninth Air Force officers planned their missions side-by-side with their 21st Army Group counterparts in the Uxbridge Combined Control Center.

In Operation Neptune, codenamed for the initial assault and lodgement on the Normandy coast, naval flagships and direction tenders provided an important intermediate communications link. Air representatives on board the USS *Ancon* and USS *Bayfield*, stationed off Omaha and Utah beaches, respectively, received requests for air support from air control parties on shore at each division and corps headquarters, and they passed them on to Uxbridge for action. Thereafter, although the combined control center provided flying control of strike aircraft by directing them to the general area, aircrews located and attacked their targets.[62] The air plan called for tactical air forces to fly four primary missions in support of the invasion force: five groups would provide beach cover; two groups, along with four from VIII Fighter Command, would fly convoy cover; five groups comprised a striking force against special coastal

Dicing shots of the formidable defenses at Normandy Beachhead, taken by the 10th Photo Reconnaissance Group one month before D-Day, provided the information needed to prepare the assault.

batteries and bridges; and six more groups remained on call, available to attack targets on the scene in cooperation with ground forces.[63]

The highly centralized Uxbridge control system proved unworkable from the start. For one thing, the USS *Bayfield* experienced communications difficulties and depended on the USS *Ancon* to relay messages. More serious, air support party officers on the ground could not transmit radio messages over the long distance directly to Uxbridge. Unable immediately to land the bulky SCR–399 high-frequency radio equipment, which possessed a range of 100 miles, planners had to substitute the 25-mile range SCR–284, a standard infantry radio, in its place. This meant unacceptable delays for immediate mission requests, which were supposed to be referred directly, and not to be relayed, from the English Channel to the combined control center for approval. That led Uxbridge officials to authorize the senior air representative aboard the USS *Ancon*, Col. Larry N. Tindal, IX TAC's operations officer, to assume additional responsibilities.

Initially, Tindal and his First Air Combat Control Squadron handled flying control and detection of enemy aircraft. After D-Day he passed targets from liaison officers in the forward areas and reconnaissance pilots directly to fighter-bombers that were available for his use. He also received word of mission results and passed it on to the appropriate ground units. In effect, the senior air representative performed the function of controller in addition to serving as the communications link for immediate, or call, missions. As air and

The D-Day assault.

ground leaders who served in North Africa already knew, responsive and effective air-ground operations demanded greater decentralization. The campaign ahead would demonstrate that centralized air command seldom functioned effectively, especially in emergency situations. In France, the reality of combat rather than doctrinal abstractions of FM 100–20 (1943) decided the conduct of air-ground operations.[64]

Although airmen flew their missions as prescribed by the tactical air plan, they found relatively little action on D-Day and the week after the landing. General Weyland's XIX TAC pilots participated in the first two assignments, beach and convoy cover, by escorting troop carriers, flying area patrol missions, and providing top cover over the assault area. On D-Day they sighted only three enemy FW 190s and easily drove them off. The *Luftwaffe*'s failure to contest the landing demonstrated for all just how overwhelming Allied air superiority had become. General Quesada's IX TAC groups, meanwhile, handled interdiction and close air support responsibilities. Army–air cooperation, the airmen's fourth D-Day mission assignment, proved especially interesting. The Army submitted only 13 requests for air support on D-Day, and the controllers refused five. The missions fell almost evenly between armed reconnaissance against transportation targets and dive-bombing of coastal batteries and gun positions farther in shore. Significantly, none of these requests originated from the air support liaison officers assigned to the forward units. Left mostly to their own devices, aircrews quickly realized the difficulty of locating and attacking targets in Normandy where one hedge-row so often looked like another.

The USS *Ancon* remained the designated control facility until June 10 when control passed to IX TAC's 70th Fighter Wing headquarters, which had arrived the day before at Cricqueville (site A–2), three miles inland from Omaha beach. On June 9, IX TAC personnel also arrived to establish their advance headquarters next to First Army headquarters at Au Gay. Henceforth, IX TAC would control all flying in support of First Army in Normandy, even though Weyland's XIX TAC pilots would remain assigned to his command. By June 13 this advance command post began assuming operational control through the 70th Fighter Wing and its fighter control center, although preplanned missions continued to be handled by Uxbridge.

The Allies took a major step during the night of June 17-18, 1944, when they authorized IX TAC to operate the air support communications and control net at Au Gay and First Army to establish the bomb line. This consisted of an imaginary line just in front of the ground forces. All flying attacks between the ground forces and the bomb line became close air support and required army coordination and close flying control. Now IX TAC and First Army planned and controlled air support missions on the continent, while Uxbridge allocated the tactical air effort and handled only those missions the continent-based joint headquarters deemed beyond their capability. Meanwhile, a few days earlier on June 10, 1944, General Quesada's IX TAC also assumed operational control of

all Ninth Air Force units operating from bases in Normandy. General Weyland, for his part, remained in England to command IX Fighter Command, which retained operational control of IX and XIX TAC units in the United Kingdom until they established airstrips in France. This arrangement continued until the end of July. In keeping with preinvasion aerial plans, Normandy would be a IX TAC show, with Weyland's XIX TAC in a supporting role.[65]

This new control system received a major baptism of fire at Cherbourg, the port the Allies eagerly sought as a supply depot. On June 21, VIII Corps requested massive air support for its final assault on the fortress city. With less than 48 hours to prepare closely coordinated attacks, Generals Brereton and Quesada decided to send all available Ninth Air Force bombers and fighter-bombers against German strong points and fortifications in a large area south and southwest of Cherbourg on the afternoon of June 22. First Army and IX TAC officers selected the targets and planned the missions. Preceded by strikes from ten squadrons of British Second TAF aircraft, Ninth Air Force sent one group of fighter-bombers over the target area every five minutes for an hour to bomb and strafe targets that the army identified by colored smoke. Tactics included dive-, skip-, and glide-bombing from heights as low as 200 feet. Medium and light bombers followed for a second hour against pinpoint targets. Despite the effort on that day, VIII Corps made little progress and failed to capture the fortress until June 26. Additional P–47 missions on a much smaller scale continued against Cherbourg until it capitulated.[66]

Armorers attach a 500-lb. bomb to a Thunderbolt.

The airmen expressed more displeasure with these results than the ground leaders did. Although Ninth Air Force officials agreed that the June 22 attacks helped hasten the capture of the city by 48 hours, their after-action report described planning deficiencies, poor use of the tactical force, and an inordinately high cost in terms of pilots lost and equipment and ordnance expended. Airmen at Uxbridge had prepared detailed plans without specific target information or army representation, which meant that the large area selected for attack did not permit sufficient concentration of forces against specific targets. Furthermore, the aerial attack occurred without on-the-scene ground-to-air control, which resulted in targets being missed or otherwise ineffectively attacked. Moreover, fighter-bombers attacked fixed fortifications, which the report's authors considered poor targets for tactical aircraft. They questioned this use of air power as flying artillery.

When measured against the results, they declared that the cost of the Cherbourg aerial operation—25 aircraft lost and an additional 46 severely damaged—seemed excessive. If the air attacks shattered enemy morale, at least for a short period, Allied ground forces failed to attack swiftly enough to take advantage of that demoralization. Therefore, the report concluded, thought should be given to moving forward ground elements within 500 yards of the bomb line, regardless of the risk. Yet, the challenge of coordinating swift Allied ground attacks after airmen had softened up enemy positions would continue to bedevil planners throughout the campaign.[67]

The Cherbourg operation made absolutely clear that major air-ground operations required extensive, coordinated joint planning and execution under close control of air liaison officers assigned with ground forces. It left open the question whether the use of light tactical fighter-bombers employed against fortified positions could be justified in terms of damaging enemy morale, if they proved unable to do serious damage to the actual fortifications. In any event, as a consequence of Cherbourg, the tactical air command–army joint operations team gained immediate prominence as the central agency for planning and conducting air-ground operations in Normandy.

Air-Ground Support System Refined

Just a few short weeks after the Cherbourg operation, IX TAC and First Army established an effective air-ground mission request system based on FM 31–35 (1942) and the North African experience. It would serve as the model for Third Army and XIX TAC, and for other future tactical air-ground support operations in Europe. (**Chart 4** depicts the close air support request system as it functioned in mid-July 1944.) The key feature involved close coordination between air and ground representatives at every level. This was achieved by collocating army and tactical air command headquarters in the combat opera-

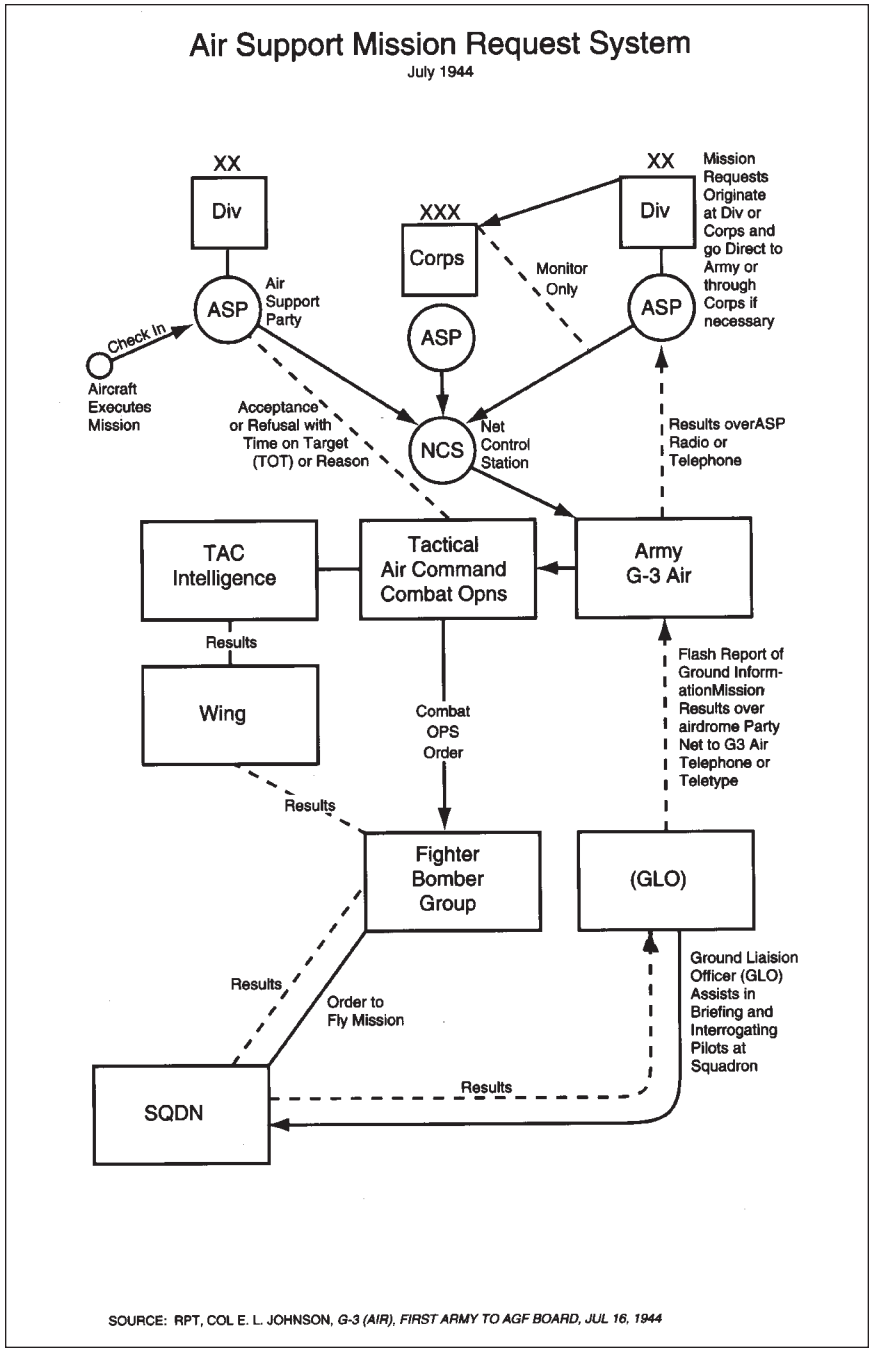


Chart 4
Air Support Mission Request System, July 1944

tions center, the nerve center directed by the tactical air command's combat operations officer. He worked side by side in a large tent with his army counterpart, the ground forces air intelligence officer, and his staff. Likewise, air intelligence personnel worked together to coordinate visual and photographic reconnaissance and artillery adjustment requests. Coordination continued throughout the system with air representatives, termed air support party officers, assigned to work with army air intelligence officials at all division and corps headquarters. Similarly, the army assigned ground liaison officers at wings, groups, and reconnaissance squadrons to work with their air force intelligence officer counterparts.[68]

This air-ground system is best understood by following the course of requests for preplanned and immediate air support missions.[69] As a rule, the army initiated preplanned requests at divisional level after discussion between the army operations officer and the air liaison officer; these two individuals determined the suitability of a given target for air action. The division request then went over army phone lines to corps headquarters, which acted as a monitoring or filtering agency responsible for analyzing specific requests for their impact on the overall corps situation. From the corps, the approved request travelled by means of an air force teleprinter or SCR–399 radio to the mobile communications van at the Joint Operations Center. A runner took the message to the army air operations officer assigned at the unit's combat operations center. The army representative went to the desk of the air combat operations officer and the two of them decided if the target could be attacked. If approved, they added it to the target list, which was presented at the regular evening joint air-ground briefing for operations the next day.

Meanwhile, the air force combat operations officer informed the requesting army unit through the air liaison officer radio net of the approved target and of the scheduled time of friendly aircraft over the target. If the target was not approved, the operations officer provided an explanation for its omission. After the evening briefing, the air combat operations officer prepared the operations order and sent it to a designated fighter-bomber group. There, the group operations officer normally selected the squadron to fly the mission and the type of ordnance to be used. Before the flight, the army liaison officer at that airfield briefed the pilots on the enemy situation, the location of the bomb line, and any features of interest to the air and ground forces.

A squadron of 12 fighter-bombers performed the basic close air support mission in Europe. Four flew top cover for the remaining two flights, each composed of four aircraft, which were assigned to dive-bomb the target. Before takeoff, the latter aircraft were bombed-up with two 500-lb. bombs each. About five minutes before the time-over-target, the flight leader checked in with the air support party officer at army corps or division headquarters on his SCR–522 VHF radio for any last-minute information on the target. The army marked these targets within the bomb line with colored smoke. After

much experimentation, the air-ground teams eventually relied on red smoke as the best for visual identification. After their bombing runs, the pilots passed their visual reports to the air liaison officer at division or corps level; then all 12 aircraft either strafed in the target area or received permission to fly armed reconnaissance in enemy territory beyond the bomb line. After returning to base, both the air intelligence officer and the army liaison officer debriefed the pilots. The army liaison officer then sent a flash report by phone or radio to the army air section at the combined operations center. The air intelligence debriefing report went through air force channels to the wing and the Combat Operations Center, where it arrived approximately 30–60 minutes after the ground officer's flash message. The army air operations officer subsequently notified ground units of mission results.

Immediate request, or call, missions, were handled in the same manner but far more rapidly. Reconnaissance and fighter crews often spotted lucrative targets that required immediate attack. They passed the information to the operations center at division or corps level through either air liaison officer or wing command post channels, where army and air operations officers evaluated it. The tactical air command operations officer then either assigned designated alert aircraft to make the attack or diverted aircraft from a previous commitment to the newly chosen target. The latter often were airborne at the time. General Quesada estimated that immediate requests could be met by his aircraft within 60–80 minutes.

The request system and the entire air-ground joint planning effort turned on a joint meeting held each evening between key air and ground officers. In Normandy, Quesada normally attended these meetings; Bradley did so occasionally. The agenda and meeting format established by IX TAC and the First Army in July 1944 became the standard for joint American air-ground operations planning in the months that followed.[70] First, the weather officer analyzed weather for the next 24 hours both in England and in the prospective target areas in France. The air intelligence officer next assessed the past day's missions flown by IX TAC in support of army and Ninth Air Force requests. Then an army ground forces intelligence officer presented the previous day's enemy ground activities, including possible upcoming enemy action. The air intelligence officer returned to discuss targets based on intelligence obtained that day from visual and photographic reconnaissance reports, enemy prisoner interrogations, and a number of other sources. Based on this information, he suggested preplanned targets for the next day from the tactical air command viewpoint.

The army air operations officer then presented the Army's plan for ground operations the following day and submitted the target request list he had compiled from army corps requests. Normally, he also suggested retaining a small force of aircraft in reserve to meet immediate requests from corps and divisions. At this point, the air operations officer allotted tactical air command

forces to the various missions identified in the meeting, on the basis of higher headquarters requests, the ground plan, the weather, enemy movements, and the availability of his air forces. After allotting these forces, the air operations section made flying group assignments for the various missions and this information was incorporated in the operations order sent to these units later that evening. The fighter control center located with 70th Fighter Wing headquarters at Criqueville performed flying control for all U.S. tactical aircraft.

Requests for reconnaissance missions functioned somewhat differently.[71] The divisions and corps submitted visual reconnaissance requirements to the army intelligence officer on duty at the Ninth Air Force combined operations center. To satisfy corps requirements, F–6 (P–51) reconnaissance aircraft flew the entire army front to a depth of 10–12 miles, four times daily. They also conducted regular visual reconnaissance in enemy territory to a depth of 200 miles. The air-ground team divided the area into three sectors to be flown four times a day. Pilots reported potential targets in the clear to the fighter control center by radio. These targets often became immediate requests. Army liaison officers with the air units also briefed and debriefed the reconnaissance pilots and passed the information on to the corps.

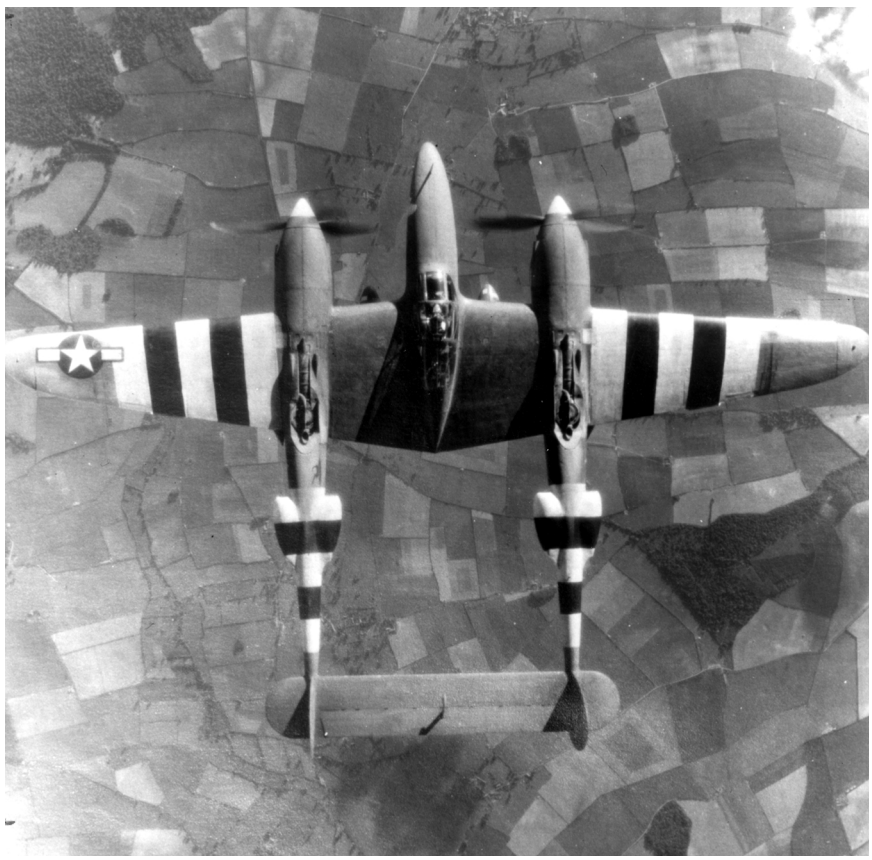
The camera-equipped F–5 (P–38) aircraft of the 67th Tactical Reconnaissance Group provided a variety of low-level photographic coverage of the target areas. In July 1944 they flew daily front line coverage to a depth of 10 miles to construct mosaics requested by the corps. They also performed automatic daily photoreconnaissance missions, which included covering specified airfields, marshaling yards, bridges, and targets that had been attacked previously. In addition to these and other pinpoint target requests, the F–6 aircraft furnished superb oblique photography requested by the corps headquarters for artillery adjustment missions. Army officers seldom complained about the quality of the aerial photography, but in the first few weeks they frequently found the delay in receiving it to be unacceptable.

The air-ground mission request system that operated in July 1944 might at first appear overly bureaucratic and involved. Initially, inexperience certainly produced its share of errors and delay. Nevertheless, observers in mid-July praised the system's effectiveness and observed that procedures adopted and equipment available had produced a level of competence and effectiveness that augured well for the campaign challenges ahead. Above all, the air-ground request system depended on the quality of the airmen and ground force personnel involved. To be sure, officers assigned to air-ground duty had to be skilled in the practices of their own service and familiar with air-ground procedures and methods. Beyond this, however, the influence exerted by an airman or a ground force officer involved in air-ground operations would disappear if he failed to understand or appreciate the other side's needs and concerns. Critical missions in support of ground forces, especially those missions that airmen judged the most dangerous, expensive, and least effective for tac-

tical air forces to perform, depended on "teamwork, mutual understanding, and cooperation" among all of the affected air and ground officers.[72]

In the initial weeks of combat in Normandy, the leaders clearly did not always have the right people in the right positions. In one of the most perceptive reports on air-ground conditions in Normandy at this time, War Department observer Col. Edwin L. Johnson noted that First Army corps commanders relieved three of their four operations officers assigned to air-ground duty within two weeks of D-Day. Furthermore, the army replaced three of its 22 ground liaison officers assigned to duty with the air units. Although Johnson tactfully avoided discussing the reasons for the reassignments, evidence suggests that substandard abilities or poor attitudes accounted for the action. Why were these officers not identified and eliminated earlier? Perhaps only actual combat offered the opportunities for assessing personal abilities and for devel-

An F–5 with D-Day invasion markings.

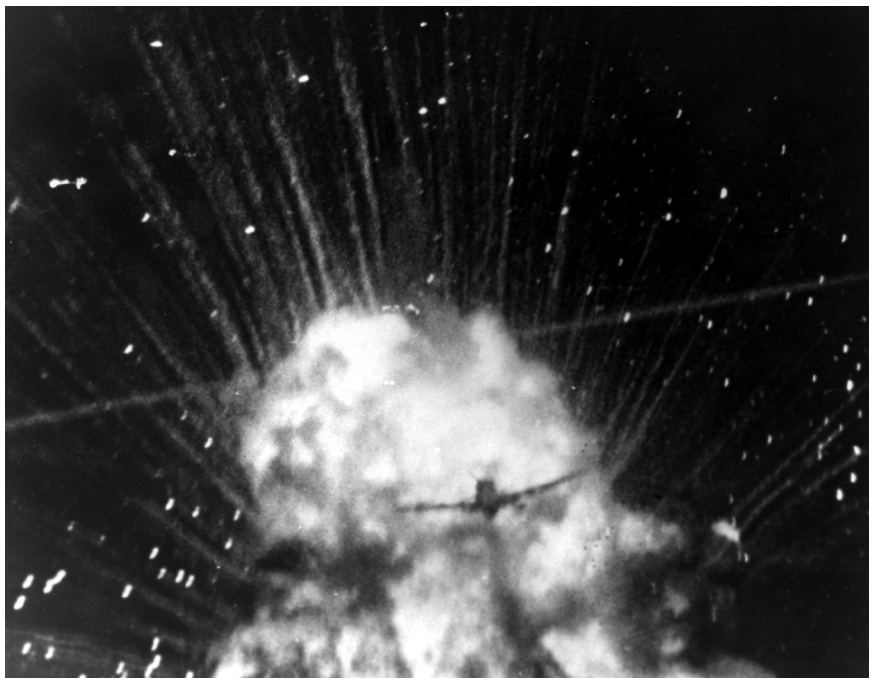


oping effective procedures and creating the teamwork required to ensure successful joint operations.[73]

On the air side, available records do not show a similar turnover in air liaison officers assigned to army units in the first few weeks. Regardless, many had problems, if of a different sort. Numerous references allude to army commanders who seemed uninterested in and unwilling to accept advice from assigned airmen. A sizeable portion of this initial air liaison force consisted of nonflying observers and communications officers. However well qualified they might have been, they did not possess the credibility of rated pilots. By early August 1944, pilots filled most of the liaison officer billets, a solution made easier by a growing surplus of aircrew officers.[74]

Beyond the need for participants who understood the requirements of their air or ground counterparts, a number of other problems affected air-ground operations. The continental airfield construction program, for example, failed to meet established schedules. The IX Engineer Command's plan depended from the start on the progress of the Allied offensive, and bad weather and tenacious German resistance in the Normandy hedge-rows slowed the Allied advance. Moreover, supply channels operating from ship to shore and thence to proposed ALGs developed bottlenecks that seemed to defy all solutions. After the landing, planners also decided, correctly, that the overwhelming Allied air superiority called for more bases for fighter-bombers and fewer for fighters. That meant additional material had to be obtained to construct the longer runways for the heavier fighter-bombers (5,000 feet vs. 3,600 feet). The IX Engineer Command scheduled an ALG for each fighter-bomber group, with five to be completed by June 14, eight by the twenty-fourth, and twenty by mid-July. Although the engineers did not meet their schedule for June, by mid-July, only 45 days after the landing, they had 16 airfields completed in France. As of August 1, only two groups, including the XIX TAC's 36th Fighter-Bomber Group, continued to fly from British bases because French airstrips remained unfinished.[75]

For the air-ground program, these delays meant that many fighter-bomber groups—with their army liaison officers—operated from England well into July, where bad weather and overloaded communications channels often made the transmission of information to the ground force headquarters on the continent impossible. On the other hand, the engineers have been justly praised for their yeoman efforts under extremely challenging circumstances and changing requirements largely beyond their control. As an interim solution, the planners adopted the *roulement* system, whereby designated clutches of airfields received top priority for completion and servicing by mobile airdrome squadrons. In effect, these advance airfields became staging bases for several units pending completion of other, permanent airstrips. As a result of this novel policy, the XIX TAC was able to provide crucial air support to Third Army in its drive across France, even though the air bases remained as much as 300–400 miles behind the front lines.



The flight leader of the 406th Fighter Group demonstrates both the effectiveness and risk of low-level attack.

Along with other air-ground operating problems that needed an immediate solution, airmen and their civilian research specialists experimented with a variety of equipment that became important in future operations. Among the more prominent, the ground-based SCR–584 radar was employed to control aircraft on blind bombing missions. Developed and used as a gun-laying radar, first at Anzio, Italy, in early 1944, its accuracy and potential for other functions led General Quesada to introduce it to guide aircraft that summer. Although achieving only limited success initially, it proved more effective after considerable experimentation in late fall under conditions of static warfare and bad weather.[76] In another first, P–47s dropped napalm bombs in the European theater on July 17 against camouflaged buildings near Coutances, France. The pilots reported a lot of smoke and the entire area ablaze. Napalm received its major test in the campaign to reduce the Brittany forts, after which it became a mainstay in the fighter-bomber arsenal employed against pillboxes, bunkers, and other enclosed fortifications.[77] In a final example of the use of new weapons, in mid-July the 406th Fighter Group's 513th Squadron installed five-inch high-velocity air-to-ground rockets. Developed by a research team at Caltech, an earlier model had been tested by IX TAC on ranges in England during the preinvasion period with little success. On the seventeenth, the

squadron of 12 P–47s, mounting 48 rockets, tested the new weapon on the Nevers marshaling yard and achieved outstanding results against locomotives and rolling stock. Although the 406th's rocket squadron officially remained unpublicized well into August, German forces in Normandy came to fear its prowess. The 513th pilots, eventually known as XIX TAC's Tiger Tamers, gained a well-deserved reputation for destroying enemy armor with these rockets. Later in the campaign, Ninth Air Force authorized General Weyland to convert the remaining two squadrons in the 406th Group for rocket-firing ground support operations.[78]

Hedge-Row Fighting to a Breakout

During the so-called Battle of the Hedge-Rows in June 1944, Weyland's XIX TAC groups flew primarily interdiction missions as Allied air leaders mounted an extensive campaign to prevent major German reinforcements from reaching the French coast. These interdiction targets included the Seine and Loire rivers, rail and road bridges, marshaling yards, and supply dumps. Cherbourg proved to be the first major close air support operation for both IX and XIX TAC units. Thereafter, England-based units, directed by Weyland at IX Fighter Command's Uxbridge headquarters, focused on interdiction targets while, understandably, Quesada's IX TAC headquarters in Normandy directed the ground-support operation with fighter-bombers based mostly on the continent. Aircraft from both locations, however, continued to conduct the escort and beach patrol missions that pilots normally found the least challenging.[79]

By mid-July 1944, XIX TAC fighter-bombers had gained considerable experience flying from England and Normandy airfields to attack interdiction and close control targets. The more experienced 100th Fighter Wing groups arrived first on the continent, led by the 354th Pioneer Mustang Group, which was one of two tactical flying units that first deployed from England. By the middle of July, all four groups of the 100th Fighter Wing flew from Normandy landing strips under IX TAC operational control.[80]

The distinction between tactical interdiction and close air support, or cooperation, missions in Normandy was not always clear. The Ninth Air Force historian for example, identified attacks on bridges south of enemy positions at St. Lo on July 16 and 17, 1944, as air-ground cooperation rather than interdiction missions.[81] This example illustrates the difficulty of accurately assessing Phase II (interdiction) and Phase III (close air support) operations in Normandy and throughout the European Campaign. The AAF Evaluation Board made this point clear at the outset of its important postwar assessment of Phase III operations, stating categorically that "it is impracticable to distinguish in all instances between Second and Third Phase operations."[82]

Traditionally, evaluators have relied on the statistical records to measure the success or failure of tactical air power. Indeed, air operations in all theaters in World War II reveal a preoccupation among airmen with verifying and quantifying. Perhaps that reflected the larger issue of promoting the AAF's view of itself as a war-winning element with a grandiose postwar future. This is not to say that statistics are unimportant. Statistics, an Eighth Air Force report on tactical air operations in North Africa declared, provide a method for assessing mission accomplishment and serve to promote competition, better performance, and a sense of pride among fighter-bomber pilots.[83] Over-reliance on statistical evidence is, nonetheless, unwise. Tactical airmen in Europe found it impossible to compile accurate statistics regardless of their attempts at objectivity. "The results of individual interdiction missions are hard to assess," the Ninth Air Force historian observed, "and the assessment of the work done by the different types of planes employed is almost equally difficult."[84] Ninth Air Force mission records show that pilots often reported "unknown" damage to their targets or "no results observed." At the other extreme, pilots often made excessively favorable claims for their bombing prowess. More than likely, the truth lay in between. A Ninth Air Force report of aerial operations in France on July 29, 1944, reported fighter-bomber claims for 1,452 motor vehicles, 197 tanks, and 98 horse-drawn carts and wagons destroyed on traffic-congested roads. At the same time, however, the report conceded that "ground investigation of a portion of the roads subjected to attack indicated that, although inevitably exaggerated, such claims were not fantastic."[85]

Independent verification by ground forces or airborne reconnaissance seldom proved feasible, nor was it capable of providing absolute answers. Given the speed of the aircraft, the smoke often encountered in the target area, the flak menace, and visibility limitations under dive-bombing conditions, aircrew reporting of results could not be entirely accurate. Moreover, it often proved difficult to distinguish between damage caused by army artillery fire and fighter-bomber attacks. Weyland and other air force commanders recognized this dilemma early and made every effort to encourage aircrew accuracy and to verify pilot reports by means of reconnaissance photography and prisoner of war (POW) interrogations. Nevertheless, the problem of accurate reportage remained unresolved throughout the campaign in Northwest Europe.[86]

Even in instances when statistical evidence proved accurate and unequivocal, it remains questionable whether statistics represent an absolute means of determining tactical air power effectiveness. The effect of tactical air operations on the morale of both enemy and friendly troops was and is undisputed. German POWs repeatedly referred to the shattering effects that close air support had on morale, while Allied ground forces acknowledged that overhead friendly fighter-bombers were a real confidence builder. After the Cherbourg assault, for example, Ninth Air Force analysts concluded from

enemy prisoner reports that "in any operation of this nature the morale effect is greater than the actual damage."[87] As the commander of the XIX TAC asserted following an air support mission in July, "the presence of our aircraft over the front line troops has had an immeasurable effect upon their morale. When our aircraft are over the front line the use of close in artillery and mortars by the enemy stops." Overemphasis on statistics could very well obscure the real significance of the morale factor.[88]

If tactical air power's effects could not be measured precisely, enemy and allied ground force leaders and their troops understood its impact well. They might sometimes refer to specific examples of physical destruction caused by tactical air, but they often described its psychological effects in demoralizing and disorganizing the enemy. Weyland recognized the psychological importance of air power and did not oppose sending fighter-bombers over a hesitant division to help it jump off. He also allowed his aircraft to patrol over ground forces to raise morale and keep the enemy's head down. Admittedly, overwhelming Allied air superiority allowed Weyland and his fellow airmen the luxury of flying morale missions without jeopardizing other responsibilities. Such missions always were frowned upon by more doctrinaire AAF officers who believed airpower should never perform functions best left to ground-force artillery units. Weyland, like Quesada and a host of other airmen in the tactical air commands, was a pragmatist on issues such as this and committed his forces in every way he believed they might support or improve Third Army's effectiveness in combat.

Leaders of XIX TAC spent much of July in Normandy on joint planning projects with Third Army personnel. The XIX TAC advance headquarters arrived on the continent on July 2 at Criqueville, which earlier was the home base for the 70th Fighter Wing (IX TAC's fighter control center) and the 354th Fighter Group. Three days later the forward echelon of Third Army headquarters arrived on Utah beach, and on July 6 its advance headquarters became operational under canvas approximately 15 miles south of Cherbourg, at Nehou. That very day, XIX TAC advance headquarters moved to join the Third Army headquarters' forward echelon at Nehou. Detailed planning for air-ground cooperation began immediately and continued during the complicated and lengthy three-week movement of army and air force operational and support units and personnel to the continent. Much of this planning involved establishing air-ground procedures, analyzing terrain for possible routes of advance, and allocating air support from fighter-bombers and reconnaissance aircraft.[89]

Third Army air intelligence personnel referred to this period in Normandy as a "command post exercise in realities."[90] Prior to August 1944, Third Army, like its XIX TAC counterpart, played a secondary role to the forces at the front. Yet, in addition to planning the forthcoming campaign with the XIX TAC airmen, Third Army sent two officers with knowledge of the air arm over to the IX TAC–First Army joint headquarters to gain experience

under combat conditions. Also, a number of ground liaison officers already assigned to Third Army and Ninth Army worked with their First Army counterparts during June and July for the same reasons. The climax of joint training for XIX TAC and Third Army came on July 22, when Patton's command received a 12th Army Group directive for the Third Army's expected mission when it became operational. In response, Third Army and XIX TAC planners prepared an employment plan that became a two-day study for all concerned. Meanwhile, much depended on the results of Operation Cobra which was scheduled to begin on July 24.[91]

In contrast to the Cherbourg experience, Cobra resulted from meticulous joint planning and extensive efforts at coordination between Allied air and ground forces.[92] Cobra called for a concentrated air assault by both strategic and tactical air forces on German defensive positions concentrated in a 3,000 by 8,000-yard area between St. Lo and Periers at the foot of the Cotentin peninsula. The assembled aerial assault force consisted of 1,500 heavy bombers, nearly 400 medium bombers, and 15 groups of Ninth Air Force fighter-bombers. The object was to blast open a path for massed American ground forces to advance with four armored columns to the south and southwest where they could destroy and isolate enemy forces and break out of the Normandy beachhead.[93]

The difficulty of the earlier Cherbourg operation, the mounting of a successful ground offensive following an air assault designed to destroy and disorient the enemy without bombing friendly troops by mistake, impressed air and ground leaders. But as successful as Cobra eventually proved to be, it created what could be called a Cobra syndrome that would affect those who planned future ground offensives involving carpet-bombing near friendly troops. The tragic bombing of friendly troops by Allied heavy bombers flying at 12,000 feet produced a false start for Cobra on July 24. A second aerial effort on the twenty-fifth also caused substantial friendly casualties, including the former commander of Army Ground Forces (AGF), Lt. Gen. Lesley J. McNair, but it succeeded in destroying and disorganizing German forces. The next morning, VIII Corps' four mobile divisions massed along a one-division front, moved forward to exploit the gap in the enemy lines under the closest air-ground cooperative effort to date.

Quesada's adventure on the eve of this operation, when he obtained a Sherman tank and installed in it a VHF radio for communicating directly with aircraft, is now the stuff of Air Force folklore. Having proved his point to the satisfaction of Bradley, Quesada provided the lead tank in each armored column with a standard fighter-bomber SCR–522 radio, along with an experienced pilot to serve as an air controller. These air controllers then talked to continuing relays of fighter-bombers that had been dispatched to cover the advance of the columns throughout the day. Quesada's innovation in communications permitted what became known as armored column cover. This was

the close air support helping to propel mobile armor operations in tactical warfare that would characterize the battle of France.[94]

Armored column cover succeeded immediately. At first, relay flights of four aircraft covered the advance of individual columns, sought out targets of opportunity, and struck those designated under the authority of the combat command commanders, directed by air force controllers. Coordination occurred entirely at the local level, with the IX TAC–First Army headquarters allocating air forces and identifying ground units to be supported. In three days, the air-ground team moved 30 miles and neared Avranches, southwest of St. Lo on the Gulf of St. Malo. The pace of advance convinced military planners to maximize the breakthrough and its opportunity for more rapid movement. They increased the force covering each armored column from four to eight aircraft. New flights arrived at hourly intervals to relieve those flights already operating in the target area. Although both IX and XIX TAC groups flew column cover missions in the drive beyond the St. Lo roadway, they performed other ground-support tasks, too. Designated squadrons remained on alert for immediate requests, while other units flew armed reconnaissance missions.[95]

With the American breakout proceeding so well, Patton grew restive. Officially, he and his Third Army had to wait until August 1, 1944, to enter the fray. At his urging, however, on July 28 Bradley named him acting Deputy Army Group Commander with operational command of all troops in the VIII Corps zone. This conformed to plans for VIII and XV Corps to operate under Third Army. For Weyland and Patton, the long wait had ended. The following day, on July 29, Weyland arrived from England and reviewed plans with Patton for operations scheduled to begin on August 1. Two days later both advance headquarters relocated to an apple orchard five miles northwest of Coutances. This would be the first of many joint moves as they prepared for mobile warfare on a grand scale.

In the past seven months, Weyland's and Patton's forces not only trained together, they fashioned an air-ground plan in which all could believe. At the same time, XIX TAC pilots and support personnel gained combat experience in support of the Allied landings in Normandy. During this period, the First Army–IX TAC air-ground team established a mission request and air-ground control system that worked. By the end of July 1944, air and ground personnel gained the necessary experience with procedures and equipment to fashion a very effective close air support system. Moreover, with an enemy now on the run and Allied air superiority well established, Weyland had every reason to feel confident. Yet, in the mobile warfare about to commence the air commander would face new air-ground challenges. To meet them, he would be forced to adopt and test new aerial practices that could not always be based on prior experience or doctrinal precepts.[96]